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Cleanings in Bee Culture



A Model Ohio Apiary in Mid-summer.

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Vol. XXXVI

July 1, 1903

No. 13

ABC AND XYZ OF BEE CULTURE

By A. I. and E. R. ROOT

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READ WHAT EXPERTS SAY OF IT

The Christmas mail brought me what is probably as useful and beautiful a Christmas present as I ever received—a morocco-bound copy of the new edition of the A B C and X Y Z of Bee Culture. Bee books and journals have come to my desk of which it seemed as though the least said the better. Not so with this book. On the contrary, it seems as though words were lacking to do it justice. There are many other bee-books, each filling its niche, but, in all the world, there is nothing so comprehensive as the A B C and X Y Z of Bee Culture. There is no point in the wide domain of apiculture that is not touched upon in this volume, and the information is the very latest and most authentic, well written and well illustrated. The amateur and the expert are both served equally well.—W. Z. HUTCHINSON, editor and proprietor of the *Bee-Keepers' Review*, and author of *Advanced Bee Culture*.

No bee-keeper's library can be at all complete without a copy of this magnificent apiarian work. It has reached a sale of over 100,000 copies already, being the most largely sold book on bees in the world. Better send us for a copy to read during the long winter evenings.—*American Bee Journal*.

This work of 536 pages is, as its name implies, a complete cyclopædia of everything pertaining to bees and bee-keeping. It was originally compiled by A. I. Root, who in the 1877 preface, after stating his indebtedness to Langstroth, Quinby, and others, says that "A great part of this A B C book is really the work of the people, and the task that devolves on me is to collect, condense, verify, and utilize what has been scattered through thousands of letters for years past." Since the first copy of this work appeared, now thirty-one years ago, it has undergone many revisions, and has had many additions, both of letterpress and illustrations, while the rapid advancement in bee culture has made it necessary in many cases to remove whole articles and rewrite them entirely. The revision has been ably carried out by E. R. Root, the present editor of *GLEANINGS*, who has had the assistance of a number of well-known and able men. In the preface the names of the writers of the different articles are given. For instance, we find Dr. C. C. Miller writes on honey-comb and out-apiaries; Dr. E. F. Phillips on the eye, parthenogenesis, and scent of bees; E. R. and H. H. Root on wax and wintering, both of these having carried out a number of experiments on these subjects. There are also articles by W. K. Morrison and Mrs. Comstock. It seems almost superfluous to say any thing about a book of which already 100,000 copies have been sold; the simple fact speaks for itself that it fills a want, and is an attestation of its worth. Among the articles that have been revised we find the new methods of queen-rearing described, so that the practical bee-keeper will have the latest and best ideas on the subject before him for reference. The new methods of wax-production are treated in an exhaustive manner; and as this subject is of more importance than formerly, greater space has been devoted to it. We have nothing but good words for this work, and recommend our readers to get a copy of the 1908 edition. The work is profusely illustrated and beautifully printed, and is a credit to the publishers.—By T. W. COWAN, Esq., editor of the *British Bee Journal*. Mr. Cowan is the author of two first-class books on bees and bee-keeping, "The Bee-keeper's Guide" and "The Honey-bee."

C. H. W. WEBER

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Yours truly, W. J. COPELAND, M. D.,
Fetzerton, Tenn.

Dear Sir:—The bee-supplies ordered from you arrived in due time, and good condition. Am well pleased.

Yours truly, CHAS. T. DOWNING,
Rt. 7, Lexington, Ky.

WANTED. Amber, light, and dark southern extracted honey. State quantity, style of package, and lowest price expected delivered in Cincinnati. Mail Samples.

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Honey Markets.

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchant. When sales are made by commission merchants, the usual commission (from five to ten per cent), cartage, and freight will be deducted, and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage, and other charges, are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

EASTERN GRADING-RULES FOR COMB HONEY.

FANCY.—All sections well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel-stain or otherwise; all the cells sealed except an occasional one, the outside surface of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

NEW COMB-HONEY GRADING-RULES ADOPTED BY THE COLORADO STATE BEE-KEEPERS' ASSOCIATION.

No. 1 WHITE.—Sections to be well filled and evenly capped except the outside row, next to the wood; honey white or slightly amber, comb and cappings white, and not projecting beyond the wood; wood to be well cleaned; cases of separated honey to average 21 pounds net per case of 24 sections, no section in this grade to weigh less than 1½ ounces.

Cases of half-separated honey to average not less than 22 pounds net per case of 24 sections.

Cases of unseparated honey to average not less than 23 pounds net per case of 24 sections.

No. 1 LIGHT AMBER.—Sections to be well filled and evenly capped, except the outside row, next to the wood; honey white or light amber; comb and cappings from white to off color, but not dark; comb not projecting beyond the wood; wood to be well cleaned.

Cases of separated honey to average 21 pounds net per case of 24 sections; no section in this grade to weigh less than 1½ ounces.

Cases of half-separated honey to average not less than 22 pounds net per case of 24 sections.

Cases of unseparated honey to average not less than 23 pounds net per case of 24 sections.

No. 2.—This includes all white honey, and amber honey not included in the above grades; sections to be fairly well filled and capped, no more than 25 uncapped cells, exclusive of outside row, permitted in this grade; wood to be well cleaned, no section in this grade to weigh less than 12 ounces.

Cases of separated honey to average not less than 19 pounds net.

Cases of half-separated honey to average not less than 20 lbs. net per case of 24 sections.

Cases of unseparated honey to average not less than 21 lbs. net per case of 24 sections.

CINCINNATI.—The market on comb honey is very slow; some new goods have arrived, but there is no demand, and it is selling slow at 14. There is some new white-clover extracted honey coming in, selling at 7½. Amber in barrels is selling at 6 and 6½. Beeswax is selling at \$33.00 per 100 lbs.

June 22. C. H. W. WEBER, Cincinnati, O.

SAN FRANCISCO.—It appears now as though there would be a very short crop in the West this season. The season for honey-making was much delayed by the cool weather, and so far very little of the new crop has arrived. The feeling of the market on these reports is very firm, and the prices are expected to advance rather than drop. Water-white comb, 16 to 17; white, 15; water-white, extracted, 8 to 8½; light amber, extracted, 7 to 7½; dark amber and candied, 5½ to 5¾.

June 20.

Pacific Rural Press.

NEW YORK.—Comb honey: The demand is next to nothing, and has been so for the past four months. A few crates of fancy No. 1 white are called for once in a while, while off grades and dark are entirely neglected. As there is practically no demand, quotations are simply nominal. We have more in stock than we can dispose of. The honey will have to be carried over until next fall. We can not encourage shipments of comb honey, as we do not think we shall be in position to render account of sales within reasonable time. Extracted honey: Demand better and market slightly improving. New crop is arriving quite freely from the South, where the yield seems to have been pretty large. We quote California white sage at 8½ to 9; light amber, 7½ to 8; amber, 6 to 6½; new crop Southern from 58 to 75 per gallon, according to quality. West India honey is arriving in fairly good-size lots and finds ready sale at from 60 to 62 per gallon, duty paid. Beeswax in good demand, and firm at 30 to 31.

June 4.

HILDKRETH & SEGELKEN,
265-7 Greenwich St., New York.

CINCINNATI.—The demand for comb honey has fallen off considerably in the past twelve months. Last year the comb-honey market was bare in February, but this season finds an abundance of that article everywhere at this date, which is late for last season's crop. We can not tell at present what effect this state of affairs will have upon the market when the new honey comes in. The market on extracted honey shows some life, but is not moving rapidly. Quote amber in barrels at 6 to 6½, according to the quality; fancy extracted honey, 7½ to 9. For choice yellow beeswax, free from dirt, we are now paying 28 cts cash and 30 in trade, delivered here.

June 15.

THE FRED W. MUTH CO., Cincinnati, O.

PHILADELPHIA.—The prospects at present are for one of the largest crops of honey we have seen in the East for the last ten years. The result is, prices are uneasy and have a strong downward tendency. Some few little lots of comb honey are being offered, but not enough to establish a price. We are looking for very low prices the coming season. Beeswax is firm at 28.

June 22.

WM. A. SELSER, Philadelphia, Pa.

INDIANAPOLIS.—With the exceptions of a few lots of old comb honey the local market is practically bare of honey. Dealers are awaiting arrival of new crop, but as yet no prices are established. Beeswax brings 28 cents cash or 30 in exchange for merchandise.

June 16.

WALTER S. POWDER,
Indianapolis, Ind.

BOSTON.—Fancy white comb honey, 17; No. 1 white comb, 16; California white sage, extracted, 9; California light amber, 8; Southern honey in barrels, slow sale, 5 to 6.

June 12.

BLAKE-LEE CO., Boston, Mass.

DENVER.—Our market is now entirely cleaned up of comb honey, and the first consignments of the new crop should find a ready sale at good figures. We quote extracted white, 8 to 9; light amber and strained, 6¾ to 7½. We pay 25 cents per pound for clean yellow wax delivered here.

June 15.

THE COLORADO HONEY-PRODUCERS' ASS'N.,
F. RAUCHFUSS, Mgr., Denver, Colo.

LIVERPOOL.—The market for honey and beeswax is steady and quiet. We quote honey, Chilean, 4 to 6½ cents; Peruvian, 3½ to 5½; California, 7½ to 9; Jamaican, 4 to 5½; Haiti, 6½ to 6¾. Beeswax is very firm—African, 30 to 32; American, 30 to 33; West Indian, 29 to 32; Chilean, 30 to 36; Jamaican, 34 to 35.

June 16.

TAYLOR & CO.,
7 Tithebarn St., Liverpool.

ST. LOUIS.—The honey market is very quiet. There is absolutely no demand for comb honey. Extracted honey is also neglected, consequently the prices have declined. Quote as follows: Fancy white comb honey, 15 to 16; No. 1, white and amber, 12 to 14; broken and defective, less. Extracted white, in cans, nominal at 8 to 8½; amber, 7 to 7½; in barrels, 5½ to 6; granulated extracted honey sells at less. Beeswax, 29 for prime; impure and inferior, less. R. HARTMANN PRODUCE CO.,

June 11.

St. Louis, Mo.

ZANESVILLE.—So light is the demand for honey at the present time that it is almost useless to quote the market. Stocks are pretty well reduced, and there is a tendency to cut prices, especially on the part of one-horse dealers. While the remnant of last year's crop is moving very slowly, some revival is anticipated with the arrival of the new crop. For good quality beeswax I offer 30 cts. in exchange for bee-supplies. Wax wholesales at 40 to 45.

June 18.

EDMUND W. PRICER,
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a sample and correspond
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HOW TO KEEP BEES

The novice in bee-keeping usually seeks for a simple book on bees, and in this he is wise. The modern text-books relating to bees are excellent in their way, but most of them are too technical for a mere beginner, however well they may be written.



A simple book written in clear every-day language is much better, even if it does not treat of quite so many little details which interest only the professional bee-keeper. In this respect "How to Keep Bees" fills the bill. The gifted authoress, who is a charming writer as well as an artist-engraver and bee-keeper, made a start with bees three different times, hence she had the opportunity of finding out for herself the

by Anna Botsford Comstock.

difficulties and trials that beset the beginner with bees. She had no desire to make money with bees, but did so, however, because they prospered under her care and skill. For this

reason she writes as an amateur to amateurs, making no attempt to discuss the knotty problems which the expert bee-keeper is interested in.

The book is written in a charming literary style, easily understood, almost entirely free from the technical language used by bee-keepers. It is arranged in chapters, and is so eminently readable withal that any one interested in the subject can sit down and devour it clear through, the same as he would a modern novel. Every thing the average beginner desires to know is discussed, including what to order if you have no bee-supplies or bees. The print is large, and some very beautiful engravings adorn its pages, for the authoress is one of the most skillful wood-engravers in America. We can not do better than recommend this work to every beginner in bee culture.

There are twenty chapters in the book as follows: 1. Why keep bees; 2. How to Begin Bee-keeping; 3. The Location and Arrangement of the Apiary; 4. The Inhabitants of the Hive; 5. The Industries of the Hive; 6. The Swarming of Bees; 7. How to Keep from Keeping too Many Bees; 8. The Hive and How to Handle It; 9. Details Concerning Honey; 10. Extracted Honey; 11. Points about Beeswax; 12. Feeding Bees; 13. How to Winter Bees; 14. Rearing and Introducing Queens; 15. Robbing in the Apiary; 16. The Enemies and Diseases of Bees; 17. The Anatomy of the Honey-bee; 18. Interrelation of Bees and Plants; 19. Bee-keepers and Bee-keeping; 20. Bee-hunting.

There is also a bibliography and index. From a beginner's standpoint it is a complete treatise on bees.

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Your shipping-clerk had them packed to perfection.

Respectfully, HUGH RICHARDSON,
Wood Co., O.

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Send address of yourself and Bee friends for 8-page leaflet on "smoker," and facts about Bees and Queens, 80 pages, free.

**F. DANZENBAKER, Norfolk, Va.
or Medina, O.**

Mr. T. S. Hall, Jasper, Ga., breeder of fine Italian queens, writes, June 11, 1908: "The three smokers came all O. K., and they are dandies; sure; are good smokers. We burn corn-cobs in them all right. We may send you orders for smokers, as several have expressed a desire for one."

Dr. R. Munson, Washington, D. C., says: "Your new smoker has a much stronger blast than the first one. I have been using the first one with a roll of newspaper, first starting the fire at the bottom, and it works finely that way, and stays lit all day. Firing it up at 8 A. M. and using it half an hour in my queen-rearing hives, and, setting it aside, I usually find it still smoking ready for use at 4 or 5 P. M."

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GLEANINGS IN BEE CULTURE

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SOMETHING NEW AND VALUABLE.

Producers of fancy comb honey will be greatly interested in the advertisement of Mr. Sackett, which appears elsewhere in these columns, wherein he calls attention to his new wrapper for enclosing sections of comb honey, thereby affording protection from dust, etc. The wrapper is made of transparent paper so that the honey is sufficiently seen by the customer before purchasing it. Instead of detracting from the appearance of section honey the paper really adds to it. It is, furthermore, quite a protection from drip, because, if a section leaks, the leakage is confined to that one section. The cost of these wrappers is small—more especially so when we consider their manifest advantages. We know Mr. Sackett, who is the inventor, will be delighted to correspond with prospective users of these wrappers, and would be glad to furnish necessary samples to all those who are interested in the production of comb honey of a superior grade.

THE AMERICAN BEE JOURNAL.

We take great pleasure in giving a few words of commendation of the "old reliable" *American Bee Journal*, whose home is 118 West Jackson St., Chicago, Ill. As the mother journal of American bee papers, it is only right and proper that we should say a word in praise of our old friend. Recently it has taken on a new lease of life by reducing its subscription price to 50 cts a year, and becoming a monthly magazine instead of a weekly newspaper. Considering the low rate of subscription we can not see how a bee-keeper can afford to pass it by when making up his list of periodicals for the family library table. It has a strong corps of editors—men and women who are experts in the science of bee-keeping, and who know how to write interesting matter. As a further inducement to subscribe, the editor promises to give an untested queen to all those who send in their subscription now, at the rate of \$1.00 for the two. In other words, the paper is free.

The *American Bee Journal* has a record that carries it back into the misty past, when bee-keeping was in its infancy and there were only about three bee journals published in all the world, whereas there are more than eighty now. At the helm it has Mr. George W. York, who does all in his power to turn out a clean up-to-date bee magazine and thus sustain the best traditions of the "old reliable." We know he is always ready and willing to accept suggestions for the improvement of his journal; therefore the future policy of the paper lies largely with bee-keepers themselves. We therefore suggest that you remember the *American Bee Journal* when making up your list of papers for which you intend to subscribe.

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Under ordinary circumstances all or any part of your deposits may be withdrawn at will.

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MEDINA, OHIO

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“Please Rush My Order.”

The demand for goods following the cold period of early May will undoubtedly be very great. Orders will come to us with “Please rush” and “Ship immediately” following them.

And we are going to do it.

We have four great railroad systems and three express companies to help us. They reach out in every direction. We also have the goods, an immense stock, and all “Root Quality.” Send for catalog.

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We are always in the market.

If you have any to sell, mail small average sample to

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BISCUIT COMPANY**

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EDMUND W. PEIRCE,
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COLORADO INTERSTATE FAIR AND EXPOSITION. DENVER, SEPTEMBER 7—12.

PREMIUM LIST OF THE APIARIAN DEPARTMENT.

Supt., W. L. Porter, 3522 Alcott St., Denver.

No.	CLASS NO. 59—BEES, HONEY, ETC.			
984	Italian bees and queen in single-comb observatory hive	\$5	\$3	\$2
985	Carniolan bees and queen in single-comb observatory hive	5	3	2
986	Caucasian bees and queen in single-comb observatory hive	5	3	2
987	Largest and best display of bees of various races in observatory hives	10	5	3
988	Largest display of queens of various races in mailing-cages	3	2	1
989	Best display, manipulation of bees	10	5	3
990	Best case of white comb honey	3	2	1
991	Best case of light-amber comb honey	3	2	1
992	Best and largest display of comb honey	10	5	3
993	Best display of special designs in comb honey	3	2	1
994	Best dozen jars of white extracted honey	3	2	1
995	Best dozen jars of light-amber extracted honey	3	2	1
996	Best and largest display of extracted honey	3	2	1
997	Best display of extracted honey in granulated form	3	2	1
998	Best 10 lbs. of yellow beeswax	3	2	1
999	Best and largest display of beeswax	3	2	1
1000	Best display of special designs in beeswax	3	2	1
1001	Best display of honey-producing plants in mounted form	3	2	1
1002	Best display of fruits preserved in honey	3	2	1
1003	Largest and most attractive display in department	20	10	5

For entry-blanks, complete premium list, rules, or further information, call on or address G. C. Fuller, Acting Secretary, suite 416 Tabor Opera House Building, Denver, Col.

The following is the premium list in the apiarian department of the Indiana State Fair, to be held at Indianapolis, September 7—11:

Sec.	1	2	3
1522	Display of comb honey—quality, quantity, and manner of putting up for market considered	\$25	\$15 \$8

5123	Display of extracted honey—quality, quantity, and manner of putting up for market considered	25	15	8
1524	Display of beeswax, quantity and quality to be considered	10	8	6
1525	Honey vinegar, not less than one gallon, in glass	5	3	2
1526	One-frame observatory hive of Italian bees, showing queen, workers, and brood in all stages	10	8	6
1527	One-frame observatory hive of foreign bees, other than Italian, showing queen, workers, and brood in all stages	10	8	6
1528	Display of bee-supplies	20	10	5
1529	Best general display of honey, wax, supplies, and other material pertaining to the bee industry	20	10	5



The above sketch shows Mr. Oliver Harris, hauling a load of hay across his marshy meadow. He writes The Electric Wheel Co., Quincy, Ill., that this is the first load of hay ever hauled over this meadow in April as he could never get through the mud with his high wheel, narrow tired wagons. With a low wheel, wide tired Handy Wagon such as The Electric Wheel Co. make, he finds it an easy job and claims he saves \$23.00, the price of this wagon, in horse-flesh alone, every year.

Our readers with muddy meadows or soft roads will be interested in a catalogue of these wagons which the above company sends free for the asking.

RASPBERRY HONEY

Our bees in Northern Michigan are storing raspberry honey. At this writing, June 19, some colonies have on their second super, and by the time this issue of GLEANINGS reaches its readers it is likely that some colonies will have on three supers. By the time another number of GLEANINGS is sent out we shall probably be extracting.

Heretofore we have never offered the honey for sale until it was actually in the cans and stored at the railroad station. This causes a delay. Sometimes the honey has been extracted a month before we get orders for it. It would be an advantage to us and to buyers if we could have orders in advance. Then we should not have to go to the trouble and expense of storing it, but

could ship it at once as soon as off the hives, while customers would get their honey that much earlier in the season. If any one cares to send us advance orders, such orders will be greatly appreciated, and the honey will be shipped the very day that it goes into the cans.

The honey will be put up in bright new 60-pound tin cans, two cans in a case, and the price is ten cents a pound, or \$12.00 for a case of two cans. Remember, this is wild-red-raspberry honey, and will not be extracted until all sealed over and thoroughly ripened, and will be thick, rich, and delicious.

W. Z. HUTCHINSON, Flint, Mich.

LISTEN!

DO YOU HEAR THOSE BEES WORKING?

Soon they will want room or will swarm.

Have you gotten your hives and supplies? If not, send your order at once. If you have The A. I. Root Co.'s catalog you can order from it. We sell their goods at their factory prices. We can fill your orders promptly now. Write for further information and our 40-page catalog.

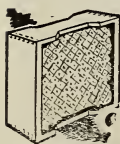
JOHN NEBEL & SON SUPPLY CO., HIGH HILL, MONTG. CO., MISSOURI.

BEE KEEPING

will be a profitable industry this season.

Honey is high—short crop last year. The shortage of the honey crop for 1907 in the United States warrants bee-keepers to increase their colonies. About a half crop was produced, and in California, where the cheap honey comes from, only a quarter of the average crop was produced.

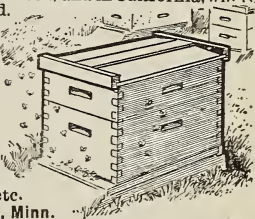
Get Ready Now for More Honey



Let us send you our catalog. We are manufacturers and sell only our own make of bee-supplies. Minneapolis is the largest lumber-distributing point; the Mississippi river furnishes us power, and our organization and labor conditions are the best for economical production. Send us an estimate of your requirements and let us give you prices. We have a large stock of standard bee-supplies on hand.

Dovetailed Hives, Sections, Section-holders, Separators, Brood-frames, Comb Foundation, Smokers, Extractors, Shipping-cases, etc.

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A 32-page illustrated 50-cent monthly. It tells all about the best way to manage bees to produce the most honey; with market quotations, etc. A dozen different departments—one for women bee-keeper. . . . Best writers.

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If you will send us your name and address with 25 cents (stamps or coin) together with this coupon, we will send you a trial trip of our journal for 12 months. Order now, and let us begin with this month's fine number. Address

American Bee Journal, 118 W. Jackson, Chicago, Illinois

THE SEASON FOR

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II

Sections

III

Foundation

IV

Inside
Fixtures

V

Bees and
Queens

VI

Veils and
Smokers

THE A. I. ROOT COMPANY

SYRACUSE

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NEW YORK

TO THE BEE-KEEPERS of CANADA.

WE are pleased to say that we are able to offer, in Canada, goods manufactured by The A. I. Root Co. While we do not offer every thing listed in their catalog, we have selected such articles as we believe will best meet the wants of the Canadian bee-keepers.

The heavy duty and freight charges we have to pay make it impossible for us to sell in Canada at Root's prices. We have, however, made prices as low as possible, and in no case do we charge nearly as much extra as the amount of freight and duty we ourselves have to pay on the goods.

We would ask you, when comparing our prices with those of other dealers, to take into consideration the QUALITY. If you do so we feel satisfied that you will place your order with us. The splendid quality of the material sent out by The A. I. Root Co. has given "Root's Goods" a world-wide reputation. Remember, "The best is cheapest."

E. GRAINGER & COMPANY
Deer Park, Toronto, Ontario, Canada

Canadian agents for The A. I. Root Co., Medina, O., U.S.A.

European Bee-keepers!

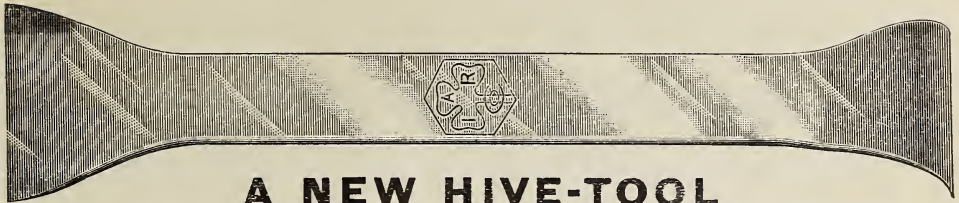
Save Time and Expense

by sending direct all your orders and correspondence to our exclusive agent for the European continent and its colonies. . .

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**EMILE BONDONNEAU**  
142 FAUBOURG - ST. DENIS, PARIS  
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**Prompt Service
and Satisfaction
Guaranteed. . . .**

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The A. I. Root Company



## A NEW HIVE-TOOL

Hitherto we have said very little about our new hive-tool, but after submitting it to some of the foremost bee-keepers of America for their candid opinion—for or against—the universal verdict is that it is a good thing; though it looks like a very simple tool it is very surprising how useful it is to an apiarist. The bent end, for example, is just right for severing Hoffman frames. A slight twist of the wrist does the business without angering the bees, and one's hand is so placed the bees do not see it. For scraping wax and propolis nothing could be finer, and it is better than a chisel, screwdriver, or putty-knife for opening hives. Any bee-keeper will be glad of one in his pocket ready for all occasions. It is made of the finest hardened steel nickel plated.

### Sample Testimonial:

*Mr. Root:*—I have been using your nickel-steel hive-tool this spring, and am very much pleased with it. It is the best thing I have tried yet. I, with my helper, have been using tack-pullers heretofore; but this is better because so much stronger. It leaves nothing to be desired except that there should be a hole in it a little nearer the crooked end. I tried to get one drilled but had to give it up—too hard; so I fastened a strap around it to fasten to my pants button.

Oberlin, Ohio.

CHALON FOWLS.

Price 50 cents postpaid.

Hive-tool, and Gleanings for a year, \$1.25.

THE A. I. ROOT COMPANY,

MEDINA, OHIO.

## NEW GOODS! BIG STOCK!

New Warehouse    Root's Goods  
Prompt Shipment    Low Freight

**EVERYTHING  
FOR THE BEE-KEEPER AT  
SAVANNAH, GA.**

We are now prepared to furnish promptly  
a full line of supplies; choice new  
stock just from the factory.

## Bees and Queens!

We have large apiaries of fine stock.  
Book your orders at once, as there will  
be a heavy demand this season. Cata-  
log sent free. Correspondence solicited.

**HOWKINS & RUSH**  
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## NEW ENGLAND BEE-KEEPERS

WE  
ARE  
HEADQUARTERS FOR

## Bee - supplies

If you wish to secure a good harvest of  
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pers on hand and ready to put on the  
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have a complete stock of Supers, Sections,  
and Foundation on hand, and can supply  
your wants promptly. Send postal for  
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## Bees and Queens.

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## Root's Goods and Root's Prices

but a location hundreds of miles nearer to New England Bee-keepers  
than the Root factory. The best shipping facilities and a large  
assortment of hives, sections, books, tools, etc., ready for shipment.  
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**SAVE EXPRESS!** by ordering  
**SAVE FREIGHT!** your supplies  
**SAVE TIME!** in  
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**H. H. JEPSON,**  
182 Friend St. Phone Haymarket 1489-1

**"If goods are wanted quick, send to Pouder."  
Established 1889.**

## **A LITTLE KNOWLEDGE OF THE BEE BUSINESS**

*By the Bee Crank.*

A certain young lady who was visiting in the country sat down to the dinner-table, which was loaded with all the good things that are found on the farm. With the other good things she noticed a dish of honey, and she exclaimed, "Ah! I see you keep a bee."

Of course this was an extreme case, yet many bee-men are but little better posted than the young lady mentioned. The successful bee-man, like the modern farmer, is the one who uses his brain as well as brawn, and who leaves no stone unturned in gaining knowledge of his specialty. It seems to me that no other agricultural industry has developed the improvements and conveniences that are now at the command of the bee-keeper. The bee-man who can get along with "a good enough out-



fit" usually hangs on instead of pushing on.

I do not believe you can afford to use goods inferior to these which I am shipping all over this great country. I notice that the demand for the Danzenbaker hive is on the increase, and rapidly too. Sections, smokers, and every thing used in the bee-yard, here and ready

for you. My Catalog is free.

Save your beeswax for me and send it here and secure highest market price, cash or in exchange for goods.

Hoosier-Italian queens are being sent by immediate return mail. If the world is producing any thing better, I do not know it. Gentle, beautiful, and hustlers. Select untested, \$1.00; untested, 75 cents, or six at one mailing at 65 cents each.

# **Walter S. Pouder,**

**513-515 Massachusetts Avenue, Indianapolis, Ind.**



# GLEANINGS IN BEE CULTURE

Published by The A. I. Root Co., Medina, Ohio

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VOL. XXXVI

JULY 1, 1908

NO. 13

## STRAY STRAWS

DR. C. C. MILLER

NORTH CAROLINA is the latest addition to the list of prohibition States. Next!

ALL BEES disappear at 65° north latitude, *except bumble-bees*. So when bees are reported in arctic regions proper they must be bumble-bees. —DR. V. BUTTEL, *Bienen-vater*, 50.

J. A. CRANE gives a good plan for starting nuclei, p. 757. But instead of caging the queen three days would he not be more sure to get cells started, and to get more of them, if he removed the queen entirely for three days?

REFERRING to a Straw on page 411, A says he didn't want his money back because the queen died several months after introduction, but on account of the poor stock he got. Perhaps I got cases mixed.

"SMOKING is not allowed during office hours." That's one of the latest rules issued by the Rock Island R. R. [Good rule, and it ought to apply to all business offices in the land, especially if women are in the room.—Ed.]

THANKS, Bro. Crane, for your tender consideration of my feelings, p. 747; but haven't I always advised beginners to begin with such sections and separators and bees as will give solid combs? And I've never been able to get such sections as well without the two pieces of foundation as with.

MEHRING, in 1857, made the first comb foundation, in a press with wooden molds. In 1874, Frederic Weiss, a German at Chicago, made the first foundation cylinders. Improved at Medina they are now used for nearly all the foundation made in this country. Weiss died in the poor-house at Chicago. The fate of so many inventors!—*Ills. Monatsblätter*.

B. F. AVERILL says, page 756, "If bottom-bars are not of good thickness to support the weight of heavy combs, there is going to be sagging sooner or later." Is it not the top-bar instead of the bottom-bar that supports a heavy comb? and if the top-bar does not sag, will the comb sag, even if there is no bottom-bar at all? Mr. Averill has struck the right thing in putting horizontal wires closer at the top than bottom.

E. G. HAND, *Canadian B. J.*, p. 73, refers to a Straw, page 78, where I said a bee-moth with its head pulled off would lay an egg between the thumb and finger—perhaps several. He thinks I ought to have said "perhaps several dozen, and possibly several hundred." All right, friend Hand, I accept the "several dozen," if you or any

other good authority has proved it. "Several" is as far as I ever tried it, and I am skeptical about the "several dozen." Positively, however, I'll not accept the "several hundred," for that's more than a moth lays in her lifetime. Prof. Cook puts the total output at 100 or 200 eggs.

K. GUENTHER, *Leipz. Bztg.*, 79, says that in shipping bees the proper place to give ventilation is not at the top nor yet at the side nor front. In either of these cases the bees will crowd upon the wire cloth and shut out the air. He puts the wire cloth under, with strips, of course, to prevent shutting off the air. Thus prepared he sends swarms to all distances, even from Germany to America. [Mr. Guenther is right, according to our experience; but we go one better in the case of long-distance shipments, putting wire cloth on *top* and bottom. But in the case of weak colonies in a regular standard hive, and for moderate distances, wire cloth at the top is sufficient.—Ed.]

ALUMINUM figures, indestructible, for numbering hives, are advertised in German journals, about two inches high, at  $\frac{3}{4}$  cent each.—*Deutsche Bzcht.*, 17. Please let us know when they can be had at Medina. [These aluminum figures, when imported to America, with duty added, would come rather high. As it is, they are rather expensive, even in Germany; for most hives, where there is much numbering at all, would have three figures. This would cost  $2\frac{1}{4}$  cents per hive. Figures printed on heavy tagboard manilla, boiled in paraffine, can be secured for very much less; and we have been informed that, when the material is boiled in paraffine, it holds its color and shape.—Ed.]

A COLONY queenless for a time is sometimes stubborn about accepting a queen. Even after it has stung several queens, giving it one or two frames of brood will bring it to its senses.—*Leipz. Bztg.*, 77. [It is certainly true that a colony queenless for several days is very often stubborn about accepting an introduced queen. We have had that experience over and over again. The sooner one can introduce after the colony is queenless, the better. It has happened with us a great many times that, when cells are started, the bees seem to put their faith in the cells rather than in any foreign introduced interloper; but we never found that the giving of frames or brood, sealed or unsealed, helped the matter any. It has been our rule to let the bees have their own sweet will, making them build cells from choice larvæ.—Ed.]

OCCASIONALLY bees may be seen loading up their pollen-baskets with wax from old combs. Dr. Brunnich, *Leipz. Bztg.*, 35, reports an especially interesting case. A bee was observed all day long for three days carrying loads of

beautiful white wax from a new comb lying on a board. To make sure it was the same bee, a dab of yellow paint was put on its thorax, and for fully eight days longer came the marked bee and carried its fifteen to twenty loads a day. [This is very interesting; but the trouble with the average American is that he is too much in haste for the dollars and cents to learn some of the hidden secrets of nature. This one bee referred to was making a specialty of gathering wax. It is a little strange that it did not bring others.—ED.]

LOUIS SCHOLL thinks the queen would not pass a dummy between brood-combs in the breeding season. Well, that's one of the things I've tried; and with one or more dummies between brood-combs (only one dummy in a place) the queen passes freely from one comb to another. As he says, a bad comb will stop her, but not a good dummy. [We have had just exactly your experience, doctor. A few days ago, in going through the south yard we found where the queen had gone behind the dummy to lay eggs, for we had placed one or two combs in the cool weather outside in order to make the breeding-room smaller to fit the small cluster; but the cluster had increased in size in the mean time, and the queen had occupied the comb the other side of the dummy, and with her a lot of bees.—ED.]

MRS. J. W. BACON, p. 693, speaking of caging a virgin queen for a few days in the nucleus before taking the laying queen away, says, "I find her dead nine times out of ten." I suppose that means she finds the virgin in the cage dead. I'm not sure it ever occurred here. How is it in Medina? And please tell us whether you still value the plan. [We suspect the trouble with Mrs. Bacon is that, in practicing the dual-introduction plan, she puts a second queen in too many days before the other queen is expected to lay; that is to say, No. 2 is too old at the time of getting out of the cage. Ordinarily we should say that the second queen should be given not more than three days before No. 1 lays. You ask what we think of the plan. While we made it work, we are not practicing it now, as we find we can get much better queens from cells put into a nucleus than from two or three or four day old virgins introduced to the same nucleus. The trouble is that the virgins are likely to receive rough treatment on being released, the degree of rough handling depending upon her age at the time of being let out from the cage. Years ago it was not deemed practicable to introduce virgins five or six days old. But they can be introduced very readily to baby nuclei, because these little weak stocks have less of a colony feeling, and will take up with conditions that they would not tolerate if they were stronger.—ED.]

"WOULD YOU advise me to try bee-keeping again? Stings affect me seriously. Some 18 years ago I gave up bee-keeping. Since then, but several years ago, I had three stings. One of the fingers swelled to the shoulder, and I carried the hand in a sling three days. Another on the face affected the side, numbing my arm, lasting about three days. The third, near left eye, closed that, and right eye partly, neck and shoulder swelling; was in fair health, but stronger now." Thus, in substance, writes L. R. Pen-

field. Hard to advise. If for the money alone, don't think of touching bees. If you like them so much that it's hard to let them alone, try it in conditions that will allow you to give them up any day with little loss. Avoid many stings at first by means of veil, gloves, and gentle bees, and it may be that, after a few stings, the effect will become less. If not, quit. [Mr. Penfield can overcome his difficulty easily if he will submit to a process of immunizing, such as we explained in GLEANINGS some time ago. Let him take a bee up by the wings, or get some one to do it for him; cause the bee barely to prick the skin of the hand or arm with its sting, then instantly brush it off. This should be done very quickly, so as not to get much of the poison into the wound. If no serious effect follows it may be repeated in about a week's time. After a month or two the dose may be repeated, a little oftener, say once in three days; but in each case care should be taken to get the smallest quantity of the poison through the skin. If this be repeated at intervals for a period of six months, the system will become gradually immunized to the effects of the poison, just as it does to other poisons; and in the same way increasing doses may be taken, and oftener. We had one case exactly similar to that of Mr. Penfield, in which the party can now go among the bees, and can be stung ten or a dozen times without any bad effects. One thing Mr. Penfield can not do; and that is, to take the whole of the effects of a sting. If it be left in the wound, and the entire contents of the poison-bag are injected into the flesh he will, of course, experience just the effects described; but if he presses the bee just hard enough against the flesh so that it barely pricks the skin, and no more, and *immediately* brushes it off, being sure not to press the poison-sac, the effect will not be serious; in fact, he may not notice it at all.—ED.]

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## EDITORIAL

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MARKET early—or at least be sure that all honey is sold before the holidays.

WE have been using the Alexander wire-cloth bee-veil. With this, one does not have to use a hat; and in spite of the awkward looks of the thing it is decidedly comfortable. We really felt sorry for Mr. Alexander when we first saw him working in one of those head-gears. While it is not particularly pretty we can say of it, "Handsome is that handsome does."

### MORE PURE-FOOD LAWS.

OKLAHOMA and Rhode Island have recently enacted pure-food laws for the protection of their citizens. The law in the first-named State is said to be quite stringent in its provisions, and requires the name of the producer or wholesaler on all goods. It may be well to remind our readers right here that they can render the inspectors considerable help by reporting cases of adulteration with reference to the sale of syrups and similar sweets. Laws of this kind require the co-operation of all good people to make them thoroughly effective.

W. K. M.



## FOUL BROOD IN CENTRAL CALIFORNIA.

J. T. DUNN, County Bee Inspector, inspected apiaries on the west side, in the vicinity of Coalinga. Conditions among the honey-bees were not found to be the best. Forty-one apiaries were inspected, 2553 healthy colonies found, and 302 with foul brood. The inspection was one of the most thorough that apiarists on the west side have been subjected to.—*Fresno Republican*.

## THAT INJURED EYE.

To the many inquiring friends who have expressed their regret and sympathy, we would state that the injured eye of which the editor spoke on page 683 is no worse; indeed, it is holding its own. We have begun to read proof again to some extent, and to read manuscript as before. But in the mean time we have been finding rest and recreation among the bees at the south yard. Possibly the reader has noticed that some of the editorial buzzings are fresh from the hive.

While the injured eye will never see perfectly again, yet it is of great assistance to the good eye in that it helps to relieve the strain on the other member.

## TIERING UP UNDER OR OVER.

THE question often arises whether to tier up during the height of the honey-flow by putting an empty super *under* the one partly filled, or whether to place supers in the reverse order. This year at our out-yards the first set of supers were filled full or nearly full from alsike alone, and the flow is now only half over. White clover is just coming in, with basswood to follow. We therefore place all the empties under those partly filled. The effect in every case has been to check swarming, and inspire new energy in the bees, as these two portions of the hive must be connected with honey. A little later we shall place the empties on top.

## POISONOUS HONEY WANTED.

PROF. H. A. SURFACE, Economic Zoologist of the Department of Agriculture, Harrisburg, Pa., so well known to our readers as a zoologist and enthusiastic bee-keeper, is desirous of receiving samples of honey supposed to be made from the laurel in the southern part of this country, and from the loco weed of Arizona, or any poisonous plants supposed to yield nectar or honey that poisons either human beings or the bees themselves. He is conducting an investigation, and we hope our readers in possession of any poisonous honey will send through the mails a good-sized package of it, which he will examine. Send also a few hundred dead bees that are alleged to have died from the effects of the poison.

## THE PRODUCTION OF COMB AND EXTRACTED HONEY IN THE SAME HIVE A MEANS FOR THE PREVENTION OF SWARMING.

WE are satisfied that swarming can be allayed and checked to a great extent, even in the production of comb honey, if the brood-nest is never allowed to become very much crowded. There is no harm in putting the super on a few days ahead of time—better by far than one day too late, resulting in the bees hanging out and the starting of initial swarming-cells. That is the

beginning of the swarming fever, and after that it is almost impossible to break it up; but if one is forehanded enough to be a little premature in putting on supers and giving large entrances (whereby the bees are less inclined to lie out in front), it will go a long way in checking the swarming nuisance, especially if the honey-flow is good.

## BERLEPSCH, DZIERZON, AND HUBER, AND THE INVENTION OF MOVABLE FRAMES.

DR. BRUNNICH, who writes so entertainingly of bees and bee-keeping in another part of this journal, takes issue with me in respect to the position of Berlepsch in the history of bee-keeping. Any reader of GLEANINGS who read my article on bee-hives in the issue for May 1 can not help coming to the conclusion that Dzierzon did not invent movable combs, neither did Berlepsch invent movable frames. Both inventions were known (*and used*) before either of these famous men was born. Huber, the Swiss, is the undisputed inventor of movable frames. He also discovered the main facts connected with the theory of parthenogenesis. Our German bee-keeping friends could do nothing better than to cut loose from their present system and adopt the Langstroth frame and hive just as the French and English have done. One of those same Texans can look after 500 colonies as easily as anybody in Europe can look after 100 Berlepsch hives. At least, that is our opinion on this side of the her-ring-pond, and quite a number of other nations are following us.

W. K. M.

## FREE HOMESTEADS.

IN Northern Wyoming, 75 miles east of the Yellowstone National Park, 300 farms, from 40 to 160 acres each, have been thrown open for entry under the terms of the Reclamation Act. This tract embraces about 15,000 acres, constituting the first unit of the great Shoshone irrigation project. The charge for water rights has been fixed at \$45.00 per acre, payable in ten annual installments; but the second installment of \$5.50 does not become due until the fall of 1909, so that the settler can secure two crops before that time. The extra dollar is for maintenance—that is, to keep the dam and ditches in good repair. Actually, the settler pays nothing for the land, only for his share of the dam, etc., in which he is a shareholder. The land and the water are inseparable. At present the only way to reach these lands is over the Chicago, Burlington & Quincy Railway; but a north and south trunk line is in course of construction, connecting Billings, Montana, with Denver. It is estimated that a settler ought to have at least \$1000 to make a fair start. It is almost unnecessary to add that this will be a fine bee range just as soon as the settlers get their alfalfa started. The climate is unexcelled. Bees may be wintered out of doors, with a fair amount of protection. Employment may be obtained from the Reclamation Service in digging canals and other work, and homesteaders will have the preference. The project is being extended so that there will be work for several years yet in extending the present systems of canals. Further information may be obtained by addressing the "Statistician," United States Reclamation Service, Washington, D. C.

W. K. M.



## STARTING STUBBORN COLONIES UP INTO THE SUPERS.

WE advocate (and always have), giving a shallow extracting super to a colony backward in going into the sections. After it begins on this a little, we take it away and give it sections. In the case of a *particularly* stubborn colony we practice giving an extracting-super from another hive in which the bees are nicely started in *building comb* and *storing honey*. This is kept on for three or four days, after which we give it to another stubborn colony.

These shallow extracting-supers that the bees have begun to work in are splendid to coax the bees upward. When the honey crop has been secured, one will have both comb and extracted honey. The proportion of either can be regulated to suit the local demand.

## A PAINLESS STING.

WE had a strange experience yesterday, June 23, and we desire to know whether anybody else has ever had any thing like it. We were stung on the wrist about one inch above the palm of the hand, at a point where, ordinarily, it would be very painful; but, strange to relate, there was absolutely no pain. The bee had lodged its sting so well that it had difficulty in freeing itself. As a matter of fact, we did not discover that we had been stung until we saw the bee whirling around and around in the effort to free itself. We removed the sting, located the small puncture, but there was no blister or swelling, *and no pain*. It would look as if one bee, at least, had been possessed of all the parts of the sting save the poison. Has anybody else had the pleasure of receiving a painless sting in a tender spot where the skin is thin? We have had dozens and dozens of stings where the skin was thick and calloused, without feeling it, but never before at a tender spot.

## PRICES OF HONEY THIS SEASON.

THE situation so far as California, Texas, and some other portions of our country are concerned, remains practically unchanged. In spite of premature reports to the contrary, we are satisfied that those sections will not yield a large amount of honey. California will have but very little, and the same is practically true of Texas. The market was demoralized in some sections by a good many left-over lots of Western comb honey which have now candied. If these had been sold before the holidays, when there was a crying demand for it, and when it could not be obtained for love nor money, the market would now be in a much better condition.

The indications for a fine flow in some of the Eastern States will have a tendency to lower prices a little from last year; but if the times pick up (as we confidently hope and expect them to do) the market will be nearly able to hold its own.

## AN ALSIKE YEAR.

THE flow from clover in many sections of the rain belt seems to be exceptionally heavy; in fact, it appears to be one of the old-fashioned clover years of yesteryear. Some untoward weather conditions might cause it to stop short off; but this hardly seems probable at this date.

The high price of red-clover seed early this spring induced farmers to try alsike, which is an easy grower, and in connection with timothy it makes a very fine quality of hay. The experiment stations as well as farmers have been recommending it for dairy purposes. This fact, with the high price of red-clover seed, has resulted in a vast acreage of alsike this year. If the farmers would only test it carefully from the standpoint of milk and butter, and not from the standpoint of the tonnage of hay, they would probably be induced to grow it more largely in the future. If they do, localities ordinarily poor or fair will be made good for the bee-keeper.

Alsike comes on a little ahead of white clover, or at least it did so this season. As the former begins to wane, the latter fills up the gap and thus keeps up an uninterrupted flow; and then basswood, wherever there is any, nicely joins hands, so that this year especially many bee-keepers will have a continuous flow of from one month to six weeks.

But the clovers have not yielded as finely in every section. In parts of Minnesota, Iowa, Michigan, and New York, there has been too much cool weather and rain; but the recent hot spells must inevitably have changed the situation for the better.

## CAP-MELTING APPARATUS AND ITS PATENTABILITY.

In our issue for May 15, page 626, and also for May 1, page 560, we gave an opinion to the effect that the Beuhne patent, issued January 8, while narrow in its general claims, was broad enough to prevent any one else from covering the same principle. Since that time we have had a call from Mr. Beuhne, of Tooberac, Australia, and during the course of our interview with him we called attention to the weakness of his patent. As he appeared to be prior to any one else in the use of any and all methods for melting cappings as fast as they leave the knife, we suggested to him the possibility of securing a reissue of his patent, with broader claims. He consulted his patent attorney, and the latter has since informed us that he thinks it is entirely feasible; and then, moreover, he is of the opinion that his client can secure a broad patent on the *method* or *process*. For this Mr. Beuhne has filed his application. If this latter is granted it would bar any one else from securing a patent if he is not already barred by the patent of Jan. 8th last, and at the same time prevent any one from using the principle in any manner whatever, providing that such a one is unable to show that he used the method or process prior to July 10, 1907, the time that Mr. Beuhne filed his application. But Mr. Beuhne will not be disposed to be unjust or unfair to any inventor, providing any such inventor can give satisfactory proof of his use of the principle.

In this connection we may say that we have examined the Beuhne apparatus, and feel satisfied that it is a long way ahead of any thing else that has so far been presented to the public. As he is a pioneer in the melting of cappings as fast as they leave the knife, he has tested almost every method that has thus far been presented, either in this country or abroad, and is prepared to show why the special construction that he uses is superior to any other design. Later on we hope to show drawings of his machine.

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By PROF. A. J. COOK.

"Man proposes, but God disposes." How true of our honey harvest! I have always thought since coming here that California was in the lead as a honey-producing State. We get such phenomenal crops when the seasons are favorable that this might be the bee-keepers' paradise except for the too frequent off years. We thought till lately that we had only to reckon with the season's rainfall. We thought, as we would know of this in the early spring, we could know of a surety whether a golden harvest awaited us, and so we would not have to provide for fixtures unless a harvest was certain. With ten or twelve inches of rain in winter we were sure of a great harvest. With less rain we would not purchase supplies, and would arrange to busy ourselves in other ways than in working with our pets of the hive.

We now know that we reckoned without our host in this regard. I fear that we are behind our brother bee-keepers of the East. With good weather conditions for the season, they are quite sure of a crop. We must have abundant rainfall and a favoring season as well. For the past three seasons our rains have been abundant and timely, and we felt sure of a generous harvest. But our springs have been cold, and we have failed to realize our expectations. This works in three ways to knife expectancy: It keeps the bees from breeding in the months of February, March, and April; it hinders flight when the time of harvest comes, and it prevents the flowers from nectar secretion at the time of the regular harvest. I never knew a better season, so far as the rains go, than this, yet I fear that the harvest will be as light as that of two years ago. The weather is delightfully cool. I once heard a physician say that the time of which he was speaking was "distressingly healthy," so we may say here in California, this spring, that the weather is distressingly cool and delightful.



### FRUIT-BLOOM HONEY.

We have just been eating a little honey that is almost surely pure citrus honey. I presume I might say orange honey; but as the lemons are also in bloom, and thickly planted close by the bees, it is quite likely from both orange and lemon. It is of delicious flavor, and we wish that we might have more of it. I had the good fortune in Michigan to secure, more than once, fruit-bloom honey. It, too, was very delicious. Of course, we can not usually get much of this honey, for, like the honey from soft maple and from the eucalypts here in California, it comes when there are but few bees, and so can never be important in the markets. It is of great value, however, in stimulating brood-rearing. The bees are also of equal or greater benefit in cross-pollinating the bloom and so in augmenting the crop.



### A WORD REGARDING ANTS.

Ants are insects that must interest every beekeeper. They are of the same order as the bees,

the *Hymenoptera*; in development they approach nearest to bees; in habits and social instincts they are very much like the bees, and in brain development and functional differentiation they are strikingly like our honey-bees. They also interest us as enemies of bees. Indeed, in differentiation of function, and in intelligence, they are superior to our pets of the hive. Their habits of slave-making and habits of division of labor are wonderful indeed, and must challenge admiration from any that study their ways and habits.

We say of our bees that they are polymorphic, for they are of three forms; while most species of insects, and, indeed, of all animals, are of only two forms, the male and the female. Ants eclipse even bees in this respect. We not only find in the formicary (the nest of ants) the queen, the true female, whose sole function, in many cases, is to lay eggs; the male bees, the ants that are comparable to the drones of the hive, and the workers, which, unlike the others just mentioned, are wingless. But we find others with large jaws and heads that are often called soldiers. These do work to defend the home against intrusion. Again, in some species there are more than one kind of worker. These will be found of different sizes, and with difference in the development of several of their organs, like the mouth organs and other parts of the body.

There have been several theories advanced as to the cause of this polymorphism. I think the real cause is the one that is generally believed by the wisest and best informed of our bee-keepers. It seems that the same agencies that have worked in the evolution of different individuals in *Aphis mellifera* have also prevailed to modify the ants, the white ant, and the wasps. It seems certain that parthenogenesis, in all these cases, has differentiated the males from the females. The males come from eggs that have not been fecundated. This is also called agamic reproduction—that is, fecundation without males. It is strange that eggs can and do develop without receiving the male element, or sperm; but this is known to occur in other insects, like gall-flies and plant lice. In some cases the result of such development is a female and not a male. This is generally true of the *Aphids*. In the bees, wasps, ants, and white ants, it is, without doubt, true that the males come always from unfecundated eggs, and so are the fruit of parthenogenesis. We are greatly indebted to the great Dzierzon for the discovery of this great truth. The generally accepted theory, that the difference in the development of females, so that in some cases we get a true, perfectly developed female, the queen, and that in others we get the usually smaller workers, comes from difference in quantity and quality of food. That there is in case of bees qualitative difference as well as quantitative, is certainly true; but in case of wasps and ants this difference is often wholly quantitative; and so we may believe that the cause of variation of development is principally from difference in amount of food. A sort of starvation process causes a stay in the development of the ovaries. It is interesting that, in case of other organs, there is greater development in the workers than in the queen. We know that the tongue of the worker is longer; and that the pollen-basket, or corbicula, is not developed in the queen. There are tremendous puzzles to be



worked out in the matter of the evolution of these polymorphic forms, and the student of this subject has great prospects before him. Darwin, Spencer, and Weismann all attacked the problem, and gave us much that is helpful; but there is a vast deal to be discovered even yet; and the one who comes to the subject with the time and ability to discover the ways that God works out these changes will be, like the great Dzierzon, a benefactor.

Claremont, Cal.

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## CONVERSATIONS WITH DOOLITTLE

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### UTILIZING THE CELLS IN COLONIES THAT ARE TRYING TO SUPERSEDE THEIR QUEENS.

"I had quite a little trouble last year in carrying out my plan of non-swarming, Mr. Doolittle."

"What seemed to be your trouble?"

"I bought quite a lot of queens during the summer of 1906, and for some reason these queens seemed to have hard work to keep up the strength of the colony. Some of the colonies having these queens increased in bees very little after they were set from the cellar, and some died outright. Many colonies would build supersedure cells, and, although not very full of bees, quite a few of them would swarm on these cells unless prevented."

"About what time of the year was this?"

"Along the latter part of May and the fore part of June; and, although not by any means as strong in bees as those colonies mothered by queens of my own raising, quite a per cent would swarm on these cells."

"Did any of your own stock act in this manner?"

"None, only some of my very old queens. I had two of my best old queens which did the same, but one was three years old and the other four. I had started in to control swarming, and every queen that seemed able to do reasonable service till the flow should come was retained and the cells cut out. To do this I handled over the brood-combs of the entire apiary, once every ten days to two weeks, and it was a job I don't care to go through with again; and that is the reason I came over to have a talk with you. These colonies with those poor queens that I bought gave the poorest honey-yields of any."

"Why did you not requeen these colonies having the poor queens?"

"I thought it would be no better to requeen, because it was a hard time to rear queens; and, besides, to have those colonies rear young queens would get no more brood for the flow than just to keep the poor queens a while longer."

"It would look to me as if you were not thoroughly posted on the superseding-queen matter, because you go on and tell me how the bees reared cells to supersede those old queens, and swarmed with those cells, or the queens from them, I suppose you meant; and then you tell me that you kept all of those old queens that you thought would possibly do any thing, because it was a hard time to rear queens. You further said to

have let these colonies rear young queens would get no more brood for the flow than to keep just the old queens a while longer, and so you just worked and worked, cutting cells to keep down supersedure swarming."

"What else could I have done?"

"Let me tell you that the queens which emerged from those supersedure cells were as good as any queens you ever had."

"What? Do you call queens good reared from those miserable queens which I bought?"

"But you said that two of your best old breeders did the same things, and the cells from these were as good as any you ever had from those queens during the years before, and it was *not* a hard time to rear queens, for the bees reared them themselves, without any hard work on your part at all."

"But I thought the honey harvest must be on in order to rear good queens."

"That may be so where the novice is rearing forced queens; but with the bees superseding queens of their own accord during the latter part of May and the fore part of June, they are making no mistake, I assure you, as to the quality of the queens they raise. You should have taken every cell you could from these two colonies with your old breeders, and, after cutting out all the cells from other colonies, put one in each colony which was found trying to supersede its queen. You would thus have superseded all of those poor queens without any swarming, without cutting of cells, and without *expense* of brood-rearing, and done the whole at one stroke; for the old queens would have kept right on laying just the same for all the cell or the young queen emerging therefrom, till she got ready to die, so you would have had all the brood you could have had in any other way till this young queen began to lay, when she would have boomed the brood without much danger of any swarming during the whole season."

"That does look reasonable, as you tell it."

"Yes, and it is reasonable in practice, as well. This is as I manage with supersedure cells early in the season, when I find any of my best colonies trying to supersede their queens, and I find there is no work in the apiary pays better than thus saving all supersedure cells."

"But if other colonies are not known to have supersedure cells, how can you use such?"

"The record kept of the age of queens, and other records, show which are my oldest as well as poorest queens; and if none of these colonies are found to have supersedure cells started, the nearly ripe cells I may have from my good old breeder, or from any good stock which is trying to supersede its queen, are put in these colonies which I think may try to supersede their queen a little later on, and in this way I nip the thing in the bud, and have many colonies renew their queens without any expense save the insertion of one of these nearly mature cells."

"Do you leave any cell with your best queen which is being superseded?"

"No, not until I see she is about to give out entirely; for if I did, as soon as the young queen emerged therefrom that would stop any further building of cells from this source. I always consider myself very fortunate when I find any colony of real good stock trying to supersede their



queen at any time during the months of May, June, July, or August, for then I cut out all the cells every ten days and use them. If I do not have colonies which will accept them, as I have just told you, I form nuclei to take them, and, when laying, later on, after the main honey harvest is past, I supersede all queens, which do not come up to my standard of perfection, with these which are ready to be used at any time, and in any place I may wish. I fear bee-keepers in general do not fully realize the value of this superseding matter as they should."

Borodino, N. Y.

## GENERAL CORRESPONDENCE

### THE NATIONAL BEE-KEEPERS' CONVENTION.

#### Of What Should the Program Consist?

BY DR. C. C. MILLER.

The article published in the *Bee-keepers' Review* by Secretary Hutchinson, as a sort of prospectus of the coming National convention, shows a careful consideration of some of the things that go to make up a good convention. Not only because of its bearing upon the coming National convention, but much more because of its bearing upon bee conventions in general, it is worth while to give the matter further consideration. Indeed, so important is it that, for the sake of emphasis, some of Secretary Hutchinson's points may be repeated, even if nothing is to be added to or subtracted from them. Moreover, it would be a good thing if members would take Secretary Hutchinson at his word, and give "help, hints, and suggestions" that may make the convention "vastly better." Like other things connected with bee-keeping, there is room for constant improvement in conventions, and worse use might be made of space in bee papers than in discussing the topic.

The discussion of some special topic for the first evening, or, for that matter, at any session, with stereopticon views is good. The only trouble is that it may not be practicable to have the stereopticon at all the smaller conventions. But that detracts nothing from its value wherever and whenever practicable.

Mr. Hutchinson suggests, as a thing never before attempted at a National convention, to have "at least one debate during each of the day sessions." Put in that general form, it is certainly nothing new, for more than one lively debate has occurred in many a session. But Mr. Hutchinson explains that he means something a little different—a regular pitting of two debaters against each other, prearranged, each an able defender, the two holding opposing views. That might be a good thing. Again, it might not. If a convention is made up of members who are slow to take part in the discussion of topics presented by the question-box, then it would help to have the time partly occupied as indicated. But if the time for formal debate is to crowd out impromptu

debate—for almost any topic offered in the question-box is pretty sure to awaken discussion with opposing views—then it might not be a good thing. Mr. Hutchinson says that "we common folks can sit back and enjoy the 'flow of words and the feast of reason.'" Couldn't we enjoy the same thing just as well in our own homes by having the two speeches printed in the bee journals? Indeed, that's just what we do have in the bee journals, frequently and constantly. But the vim and the snap of the impromptu discussions, when many an idea is brought out that would not be presented in a prearranged debate, nor given in the bee journals, partly because some will take part in the offhand discussions who would not write for the journals the things they say in convention, these things we can not have except in convention, and we want to get there what we can not have elsewhere. In the days when more than now time was taken up in convention with prepared speeches or essays, one can recall that one gave scant attention to these many a time, thinking that one would get exactly the same thing to be read at leisure afterward, saving the attention for the wide-awake offhand discussions that could never be exactly reproduced on paper. Would it not be the same thing with any formal debate?

Most bee-keepers will heartily second Secretary Hutchinson's motion to cut out the banquet. The mass of bee-keepers are not nocturnal birds; and the banquet, with its late hours, would do more to unfit than to fit them for the next day's work. Whether all would favor an evening of prepared speeches, speakers not previously announced, is a question. But there is no disputing Mr. Hutchinson when he says: "To attend a convention at some distance from home is more or less of a strain, at best, and every precaution ought to be taken that the members should feel just as well and as bright as they possibly can; otherwise there is little enjoyment." There are breakers ahead in two opposite directions. There is danger that the long-continued strain of close attention may be so great that the sessions become a pain instead of a pleasure, and the tired mind may actually refuse to continue action. On the other hand, members feel they want to get in all the time they can in actual convention work—in real bee-talk. Well-meant but ill-directed kindness often suggests that something should be provided for the entertainment of members in attendance—an excursion by way of boat or trolley, etc. Some may enjoy this, but many will count it time lost. A mayor or other official, who doesn't know a drone from a worker, is chosen to make a welcoming address, enlarging upon the beauties of the place, its prosperous manufacturers, etc., and time is taken for a response, and this, too, will be counted time lost.

Well, if such things are not the best to provide proper relaxation, what is to be done to relieve the constant strain? It should be remembered that the strain comes, not from the number of sessions, but from the long-continued strain of each session. Plainly, relief should come by a rest in the middle of each session. In our public schools, instead of a continuous session from 9 A.M. till noon, a recess of 15 minutes is taken during the forenoon, and with that rest more is accomplished in the 2¾ hours left than would be

accomplished in the unbroken 3 hours. So let a recess of 15 or 20 minutes occur in each session. Have it distinctly on the program, so that by no possibility may it be omitted.

There is another matter of exceeding importance that helps to prevent the weariness of a long session—ventilation. In too many conventions there is no one whose special business it is to see to ventilation, and after the same air has been breathed over and over again for two to four hours it is no wonder that heads are not clear for close attention. Why not have a committee on ventilation? If there are not good means for constant ventilation, let all doors and windows be opened at recess, and let all arise from their seats and move about the room to avoid the chance of taking cold.

Marengo, Ill.

### HOW FAR DO BEES FLY?

**Some Evidence to Show that this Distance is Greater than that Commonly Reported.**

BY J. J. WILDER.

I once lived in Arkansas, in a "point"—a small piece of woods extending out from woodland into a prairie. The forest was heavily timbered, and many of the oaks were hollow; and I have never seen in my ramblings as many wild bees as were in this section. Bee-hunting and game-hunting were the sports of the day.

During the swarming season it was nearly an every-day occurrence to see or hear swarms passing over, going in various directions. I have seen some swarms go out across the prairie in such a direction that, if they did not change their course greatly, they could not have reached a destination under 25 or 30 miles, there being no trees in the direction they went. There was nothing but prairie grass, and occasionally a small island of sassafras-bushes which were often burned off by fire. Sometimes points of wood could be seen in the far distance, but these could not be reached without a great change in their course, and most of these points contained only small growth.

It was believed by some that the swarms going out on the prairie took up their abode in the prairie grass; but this was not proven, as no swarms of honey-bees could ever be found in it.

Peddling was a part of our business, with Little Rock as our market, and to reach it this prairie had to be crossed, and about midway there was an island of trees with a pool of water in it. We made this our stopping-place at noon or camping-place at night. Here we sometimes saw honey-bees on the bloom of hazel-nut bushes, and at first we thought there was a bee-tree there until we made diligent search for it, and found there was not. Then we concluded that the bees came from trees in the distant points, which were about ten or twelve miles away, even if it was in the point and not in woodland below it.

I have seen enough facts, to lead me to believe that the black (wild) bees are far better travelers than the Italians, and that they never could have made the progress across the continent the black

bees have, and can never receive the same abuse at the hands of the inexperienced.

Cordele, Ga.

### THE HONEY-GRADING RULES.

**Too Many Grades Makes it Difficult to Distinguish One from the Other; a Plea for Simplicity.**

BY L. C. CLARK.

The Eastern grading-rules for comb honey which head your market column are too complicated. There are too many grades for practical use. Here are three grades of honey, including No. 1; and it would puzzle an expert to designate the dividing line between these three grades. Why have any third-grade honey as described in your grading-rules? It would weigh from 7 to 9 lbs. per individual crate, and, taking your No. 2 as a basis, No. 3 might have only half of the surface capped over. It would not be any credit to a bee-keeper, nor would it pay him to ship or sell such honey in a retail way. It should be cut out and sold for chunk honey, or by weight in larger quantities, to the local trade. To make the matter more confusing to the novice you say in the last paragraph, "In addition to these grades it is to be classified (does this mean *graded*?) according to color—white, amber, and dark." Now, does this mean that each of the five grades named is to be divided into three more according to the three colors named? If this is intended it would make 15 grades, and no one could follow the rules with that number of grades. I realize that in some localities the honey might all be amber late in the fall, when it could be graded fancy amber, No. 1 amber, and No. 2 amber; but applying this rule to an entire crop of dark honey would give us fancy dark, No. 1 dark, and No. 2 dark. Who can imagine fancy dark honey or even No. 1 dark?

To simplify the rules I would suggest that A No. 1 grade be dropped entirely; for, according to the wording, there is very little difference between it and No. 1; and, for reasons before given, No. 3 should be dropped; also honey with any considerable part of the surface uncapped should be excluded from No. 2 or any other grade. This sanction of one-fourth uncapped in No. 2 and No. 3 is a temptation to some to send all kinds of unfinished leaky honey to market, to the detriment of the trade. Where is the trade that would take half-weight sections as specified in No. 3?

The rules of the Colorado Honey-producers' Association, page 490, are much simpler and more easily understood than the Eastern rules; and were it not for a class of amber honey there would be but two grades in these rules, which is enough except for the fancy trade of large cities. Bee-keepers may grade honey as they please, and it facilitates a fair understanding between the producer and commission men and dealers. But the retail buyer who is to consume the honey grades it with his eye before purchasing; and the color (white) is the most important consideration. Therefore it would seem that we should give color more prominence in our rules.

Bakersfield, Cal.



[The Eastern grading-rules were adopted at the convention of the National Bee-keepers' Association in Washington, in 1892. The matter had been thrashed out over and over again; but the rules that were adopted at that meeting, notwithstanding they did not please every one, have seemed to stand better than any thing else.

It is very seldom that dark or amber *comb* honeys are marketed if we except buckwheat; and in referring to it we say "fancy buckwheat," "No. 1 buckwheat," etc. But when one has a certain lot of nice comb honey that is dark or amber, or of unknown source, or of a mixed source, the only way to mark and grade that honey is by the qualifying adjectives; as, for example, "fancy dark" or "No. 1 amber." There is so little of this honey produced in sections that a very small quantity, comparatively, of it is offered. Practically speaking, we do not hear of "fancy dark" or "fancy amber;" but it seems unavoidable to have these gradings to take care of certain lots of honey that must occasionally be offered.

The Western grading-rules apply to a strictly Western honey, nearly all of which is white with some amber. In the West, at least in the Colorado districts, the honey is graded in the matter of weights *by the case*, and we are of the opinion that it would be wise for the Eastern bee-keepers to adopt the same scheme in their grading-rules. It is simply impossible to make every section of a certain grade of the same weight; but it is possible to make all of the sections in a case average up.

This question is open for discussion, and possibly it may be wise to modify the Eastern rules to take in the scheme of grading by the case as well as by the section. This would be a very proper subject for the next meeting of the National Bee-keepers' Association to discuss at Detroit. The matter is respectfully referred to Secretary Hutchinson.

We must beg leave to differ with our correspondent wherein he believes that fewer grades would be desirable. They might be for one locality; but a set of grading-rules must be expansive enough to take in *all* localities, say east of the Mississippi River or west of it. The time was when there were fewer grading-rules, and trouble resulted from the fact that there was too great a difference between one grade and another. No, no! we feel sure that there should be as many grades as now exist. To go to the other extreme would only be going back to our old difficulty. —ED.]

## THE TROUBLES OF AN AMATEUR BEE-KEEPER.

### Fall Fooling.

BY F. DUNDAS TODD.

"Leave well enough alone!" Not on your life, especially with such interesting possibilities as a hive of bees. I considered I had been dead lucky in landing up against trouble at the beginning of my bee-keeping career; and, having come well through my first campaign, I was ready to tackle something more difficult, just to keep myself interested. Happy thought! why not devote

one hive to experimenting with the Ferris double-queen system which was then being described in GLEANINGS?

It was now well on in September—far too late to start with this scheme; but I set to work to make the necessary fittings, got deeply interested and made them for all three hives, and sent for a couple of queens as a starter.

Problem: given a hive, find the queen. In the sweet springtime it is apt to be rather easy, for bees are few and queens are big; but it is difficult in September, when bees are many and queens are shrinking. I read all the matter in all the books and magazines on finding queens, and could tell the proper procedure with all possible complications. First, choose a sunny day and have the sun at your back; pick out the first frame and quickly glance over the next in the hive, then examine the one in your hand. Then take comb No. 2 and glance at No. 3, then examine the comb in your hand, and so on to the last frame. If unsuccessful, repeat. If still unsuccessful, stack the combs in pairs for a little while. I did all this without success. I had bees everywhere, but not a trace of the queen. Dr. Miller says, and he is an authority, "When the queen must be found" (this was my condition exactly, and by this phrase I knew where I was at)—"put the bees through a sieve made up of a hive-body and a queen-excluder frame."

Great scheme! On paper it looked fine, and my boy and I both thought if we had been wise we would have tried the last scheme first. Just think of it! pass your bees through a sieve, and the remainder is a queen. No problem at all, for a problem is when you try to do a thing in an undoable way.

So we nailed a honey-board to the under side of a hive-body and shook into this sieve all bees from the frames and the hive, replaced frames in the hive, put the sieve on top, and awaited developments. Conditions were getting pretty tense as night was approaching, only two hours off, and we had thousands of bees in the air and in the sieve. Something was wrong somewhere. The bees would not go through the device. Then we smoked them, which started a few of them on the downward path. Smoking, I had often been told, had this effect; but I longed for a wholesale process, as this was too slow. At length I put the cover on the sieve and retired to have a smoke on my own account, believing it would be less irritating to the bees. Just before sunset I overhauled the contents of that sieve in a last effort, and decided that, first, the queen was lost; second, the queen was not lost. Either way it did not matter, for I had two queens, so I would divide the hive with the division-board, introduce a caged queen on each side, and let it go at that. The queenless side might accept; the other would take care of the intruder. This was done, and on examination a week later I found the old clipped queen in one side and a balled dead queen in the other.

Next day I opened the other two hives, found the queens without any trouble, put in the division-board, and the day following introduced queens to the queenless sides. One was accepted by the weakest hive, the other was not. A week later I tried again in the two hives where I had failed; but as the season was now far advanced I



felt I could not afford to open the hives again to overhaul the frames.

Does not Doolittle urge the importance of "millions in the hive" in the beginning of winter? So I proceeded to feed each side of the hives from above, night after night, until the bees seemed to be unable to take down any more. I noted particularly that No. 1, my original, and a very strong hive, took by far the most; No. 3, my second best, took down very little; but No. 2, the weakest, did fairly well. These facts are worth remembering in view of the developments in the following spring, and I had food for much thought in the summer and fall of 1907 in an endeavor to account for the unexpected way they behaved in the building-up season.

In the beginning of December, 1906, I bunched my hives side by side and enclosed them in a strong packing-box 8 feet long and 4 feet square, filling up every nook with dry leaves. I left an open space six inches wide in front of the entrances, and set a sloping portico to protect from strong winds and drifting snow. The entrances were contracted to 3 inches by  $\frac{3}{8}$  for each division. The bees wintered finely, very few dead being found at the entrances or on the bottom-board at the end of winter. They had a flight the first week in January and again in the middle of February.

Toward the end of December I saw a dead larva at the entrance of the side of hive No. 3, in which was the new queen. I had seen a few eggs and the queen herself at the last examination, so felt hopeful. January 5 I saw four drones flying from this side, and now I had cause for wonder; but all I could do was to wait until spring.

During the winter my interest in bees continued to develop at a rapid rate. In my day I have had many hobbies, but this was the first with living animals I had ever got interested in. Chickens had never appealed to me, though I had kept them in a perfunctory way for the sake of their product. Speaking of chickens reminds me of one of my neighbors who, for several years, kept the finest strains in the market, and most methodically followed all the rules and regulations recommended by the authorities. Never did I see such beautiful birds as his Wyandottes and Orpingtons: never were chickens so comfortably housed, methodically fed and cared for, yet not one egg did my neighbor get for eighteen months. Of course, we teased him unmercifully—that is part of the fun of suburbanites. When I was busy trying to introduce the duplicate queens, one of my boys was reading up the subject in the books. When he came to where it is told that in the spring a queen may lay as many as 4000 eggs in one day he dropped the book and exclaimed, "Why does not Mr. Thomson get a cross between one of our queens and his chickens? He would get eggs then for sure." Thomson's hybrids added a little to the gaiety of the village for a few days.

Two books I found specially interesting at this period, and some of my readers may be glad to hear of them. One was Mästerlinck's classic book on the bee, written in a style that is both poetic and scientific. It is not a book on practical bee-keeping, but is a charming study of the social arrangements of a hive. Even more fascinating to me is "A Level of Social Motion,"

by M. A. Lane, which is published by McMillan. Primarily this book is intended as a prophecy of the final outcome of the evolution of human society, the limit being when it shall become in stable equilibrium with its environment. Bees, the author considers, have already attained that condition; and, using the hive as a prototype, he works out a very interesting theory. Any bee-keeper who happens to be interested in sociological subjects will find in this volume an epitome of our present-day knowledge perfectly marshaled, and applied in a new way. A very important conclusion is arrived at.

Medford, Oregon.

## EXTRACTING HONEY IN COLD WEATHER.

**Leaving Honey on the Hives until Fall, and Extracting the Whole Crop at One Time by Warming it Artificially; the Use of Bee-escapes.**

BY E. D. TOWNSEND.

Several bee-keepers in this part of the country have out-yards near the home yard, and draw all the honey home to extract. Mr. F. J. Miller, of London, Ont., Can., has a full equipment at his home yard, including a gasoline-engine, to run his extractor, honey-tank in basement, etc. The honey runs by gravity into the tank, and from the tank into the can on the scales. In this way there is no handling of honey, for it is necessary only to lift the full can from the scales and put an empty one in its place. Every thing is arranged with such complete system that Mr. Miller alone, with his one-horse wagon, draws home and extracts all the honey from 500 colonies.

One of the secrets of his success is in having plenty of empty combs, for he does not extract during the honey season, but on rainy days later, when nothing else can be done. He is thus independent so far as help is concerned, for if he gets in a "pinch" he can at least give his colonies more room.

We have drawn home considerable honey to extract, but we found the work a little on the strenuous order since we did not have every thing arranged for doing so much at once. With Mr. Miller's system I can see where failure might be turned into success.

Mr. E. E. Coveyou, of Petoskey, Michigan, has his two main bee-yards located along a railroad. He formerly shipped his eight-frame extractor, gasoline-engine, honey-cans, etc., to these yards each spring, and then, after the harvest was over, he shipped the apparatus and all the honey back to Petoskey where he bottled the honey for the grocery trade. Since his large bottling-room in Petoskey could just as well be used for an extracting-room also, he will now ship all of his honey there to be extracted, and he will, therefore, be able to have every thing arranged as conveniently as possible. In the spring the empty combs will be shipped back to the yards. Of course, there will be a large freight-bill to pay when following the new plan—possibly there will not be much difference in the expense of transportation between the new plan

and the old; and experience alone can tell which is the more economical.

It is evident that, if honey is taken from the hive with the bee-escape, and drawn home, it will be too cold to extract to good advantage, so it will have to be warmed artificially. The most feasible way to do this for the average bee-keeper is probably to set up a heating-stove in a small room in order to make matters more convenient, and also to save fuel. If this stove were set in the center of the room the supers of honey could be piled criss-cross around it. Since the hot air ascends, it is well to build an open platform two feet from the floor, on which to pile the honey, for supers placed next to the floor would not get warm, and they would have to be lifted up eventually to a warmer part. We have used three benches to good advantage, placed around the stove in the shape of a triangle, though leaving an open place through which to fire the stove. Of course, it would be possible to get the room so hot that the honey would be warmed, no matter where it might be placed; but in order to do this the heater should be large or else the room quite small. O. H. Townsend, of Otsego, Mich., has a plan similar to this, only he goes a step further and even cures that part of the honey that was not capped. Concerning this, he writes as follows:

For a fall flow of honey, the plan of extracting the honey after the flow is certainly a good one. If the building is set up properly the work can be handled very easily, and the honey extracted just as well in November as in July.

One thing must be remembered, however, that the supers, when they are stacked up, must not be covered tightly or else the moisture will not escape; and any unsealed honey will sour in two days in such a warm room. In taking off my honey last year I found that there were eighteen or twenty Heddon extracting-supers that had been put on very late, and these contained practically no sealed honey. I left them on the hives so that the bees might move the honey down if they would; but they did not, so I shook the bees from these supers on the ground in front of the hives and set them in my little bee-escape building, which is six feet square inside, with open screened windows. The weather was cool and rainy, so the honey was undoubtedly very thin, although I was not afraid of its souring, because of the cold temperature. I should have put it in my extracting-room; but as I was busy there I left it outside, where it was more out of the way. After these cases had been exposed to the damp air for five or six days it was set into my honey dry-kill, where it was left just seven days, when it was extracted. I then found that it had been exposed to the warm air about four days too long, as it was possible to get only a part of the honey out of the combs. This thin watery honey was, therefore, evaporated down to the heaviest-bodied honey I ever saw, in seven days.

My building is built well. It is sheathed with planed unmatched boards, then covered with a good firm quality of building-paper, and finally sided over with ordinary beveled siding. The room at the end for warming the honey is 10 x 14 feet, and is lined on the sides and ceiling with the same kind of paper as that used between the sheathing and siding, this paper being lapped and fastened to the siding with slats, making good tight joints. I find that the paper retains the heat as well as or better than plastered walls, and it allows the moisture to pass through it, insuring a dry room. The paper cost 50 cents per roll of 500 square feet.

In the center of the room is a box stove with oval sides, the first joint of the storepipe having a damper. As the fire-door fits tight, the draft can be regulated to perfect, which feature is important, as it allows the heat to be controlled, and prevents the waste of fuel. With wood of fair size the fire can be kept over night if the dampers are properly regulated.

When the extracting is to be done in cold weather I start the fire a day or two beforehand. As mentioned before, three or four days are necessary to ripen thin honey; and when the evaporation has been kept up long enough the covers can be placed tightly on the supers to prevent the further escape of moisture. There is some danger of melting the combs in the upper supers if the covers are tight; but if one is careful to keep the temperature right, there will be no trouble. I have quite an air-space above the supers of honey in the gable roof, which keeps the temperature of the room more nearly constant.

I do not depend upon the warm room for ripening all my honey, as it is left on the hives all through the season. However,

there is generally some that is not sealed, and this is greatly improved by the evaporation.

O. H. TOWNSEND.

When following the plan of extracting the honey late in the year the combs may be freed from bees with the bee-escape or by brushing. At our Kalkaska yard, where both comb and extracted honey are produced in the same super, all supers are taken off with the escape. One day is sufficient to free the bees from a shallow super; but more time will be necessary to get the bees out of a full-depth super. Knowing that the Hutchinsons have had much experience in getting bees out of full-depth supers with the escape-boards, I asked Mr. Elmer Hutchinson, of Pioneer, Mich., to tell something of the plan. His letter is as follows:

We put only one full-depth super over an escape-board, for the bees are rather slow in leaving if more than one are put on at once. We give the bees a few vigorous puffs of smoke, driving down perhaps half of them, and then put on the escapes. If these are put on in the morning of a warm day, from one-half to three-fourths of the supers will be ready to come off by evening, and most of the others will be free of bees by the next morning. I have not noticed any difference in the time it takes, whether the combs are all sealed or only partly sealed; but a few dozen cells of brood will hold the bees in the supers a long time.

There is one thing about which I should like to caution beginners: Be sure the colonies have a queen; and, no matter how tight the covers are, keep a close watch, for there may be trouble from robbers.

ELMER HUTCHINSON.

Remus, Mich.

## USING HONEY FOR CANNING.

### Honey Cheaper and Better than Sugar for Canning Fruit; Honey Better than Molasses.

BY MRS. FRANK McGLADE.

In the March 1st issue of GLEANINGS, page 278, I notice that the strawberries put up with honey were all right, as I was sure they would be. So far I have used honey for canning fruit only in a small way, but have watched the results carefully, and am fully convinced that it can be used in place of sugar for any kind of fruit with much better results than if the sugar were used. When using honey I have never had a can spoil, and have always found the fruit far better and richer than that put up otherwise. We have been eating some peaches this winter that were put up three years ago, and in that time we have moved once. In every instance the "gude mon" has handed up his dish for a second helping, which is always a sign that it "hit the spot." I would, therefore, advise those wishing to try the honey to do so by all means.

Formerly, when I canned strawberries I took two quarts of good firm berries, just from the vines, stemmed them late in the day, rinsed them quickly in cold water, and drained in a colander until I could prepare another can. I put them in a stone crock and covered them with a cup of granulated sugar and set them in a cool place until morning. I then put them on the stove, boiled them well, and canned them. With this amount there is enough to fill a quart Mason jar, and a little over for a taste. When using the honey in place of sugar the same method is followed except that only half a cup of honey is used, which is poured over the berries so that it goes down through and all around them. We are careful to use good fruit, as one over-ripe berry may spoil the whole lot. Cherries, raspberries,



and blackberries may be canned, using about half the amount of honey that would ordinarily be used of sugar. The larger fruits, such as peaches, pears, quinces, etc., are also improved by the honey.

Fruit must be handled right in order to be good, and we must be free from other duties while canning it. A very safe rule is to follow whatever plan has been found successful, substituting half the amount of honey for the sugar. I am sure no one will be disappointed.

For cooking purposes, making pickles, etc., honey is just fine. We never buy molasses, corn-syrup, or glucose—"ugh!" You should see some of my ginger-bread which Mr. McGlade says is the "cake that takes." Here is the recipe. Try it for yourself.

Two eggs, cup granulated sugar, cup and a half of honey, cup of sour milk or buttermilk; cup of butter or lard; teaspoonful of cinnamon and a teaspoonful of ginger. Beat all together and add two teaspoonfuls of soda dissolved in a little hot water; flour to make a thin batter (about five cups). Bake slowly.

We use honey in making pumpkin pies—a generous teaspoonful to the pie. Furthermore, we use honey on the table every day, and our little boy never tires of it. He helps himself with a spoon whenever he likes, at mealtime or between meals, and has not had a cold nor seen a sick day this winter, although he runs and plays out in the fresh air in all kinds of weather. Of course, honey can not be given entire credit for this, but it helps, and is cheaper than doctors' bills.

Some have asked whether fruit can be put up cold by simply filling the can with the fruit, covering it with honey, and sealing. I have never tried it, because I don't believe the fruit would keep or be good; but if any one wishes to be convinced, let him try it, for it would cost only about seventy-five cents.

Hebron, Ohio.

## FULL SHEETS OF FOUNDATION IN SPLIT SECTIONS A SUCCESS.

BY JAMES P. HOWARD.

In reply to the footnote at the end of Mr. Atwater's article on the use of full sheets of foundation in sections, p. 152, Feb. 1, I can say that we have used them to some extent for the past two years. We used the Coppin split section, which is made in two separate pieces. To fill in the foundation, a *holder* is placed in a *form*, and a row of the *half-sections* laid in, when the holder is keyed up in the form so that the sections are held in exact shape to go into the super; then the sheet of foundation, cut to the exact size to fit the row of sections, is laid on, the other half of the sections laid on, then a piece of board of suitable dimensions placed on the sections, and pressed down *very* firmly. I pound it with some solid light weight, after which I grasp the holder so that the sections can be held in place, lifted from the form, and placed in the super.

In the first season's trial I don't remember any failure of sections being *completely* filled and finished in *fancy* shape—not a single pop-hole anywhere.

We tried still more of them the last season, with about the same results during the first half of the season; but in most of the supers filled

later there were more or less brace-comb attachments to the fence separators, which were a serious objection wherever they occurred. It seemed to be caused by the sagging and *bulging* of the foundation, bringing it too near the separators. The foundation used was all of the same lot, and all other things and conditions the same so far as we could see, except the weather, which was very cool the past season. On the whole we consider it a success. The sections are  $4\frac{1}{4} \times 5 \times 1\frac{1}{8}$ , and fit finely in the regular Ideal supers.

### LIQUEFYING CANDIED HONEY.

In the light of our experience "in this locality," Mr. Holtermann's statements in the last two sections of his article, page 145, seem very absurd. Honey in the brood-chambers of our hives, when candied, remains so until thrown out, and some is always thrown out of some hives as soon as the bees began to uncup any in the fall. I think he would get very tired of waiting for such honey to liquefy at a temperature of 100 degrees.

Milwaukee, Wis.

### EXPERIENCE WITH FULL SHEETS OF FOUNDATION FASTENED ON ALL FOUR SIDES OF THE SECTION.

Mr. Root:—In the issue for Feb. 1 you ask for reports from those who have used sections with foundation fastened on three or four sides. We used several thousand the past season with fastenings on four sides in  $4 \times 5$  sections in Danzenbaker supers, and the product was entirely satisfactory. I believe there were not two cases of ill-shaped or unmarketable sections in the whole of them.

The hives were fairly well shaded, and possibly that might help a little in preventing sagging and buckling. But in the same yard we used sections with foundation fastened only at the top in the usual way, and the honey was just as good in every way except some that was gathered later, and also some where only narrow starters were used.

I would say that, so far as quality of finish is concerned, nothing could be finer than the honey produced on foundation with four sides fastened; but the extra work is just that much added to the cost of production; and, in our experience last year, it was entirely useless.

### CONTINUOUS SMOKE THROUGH COMBS ON A WHEELBARROW TO STOP ROBBING.

Last fall I discovered what I think is a very good plan for getting the upper hand of the robbers when taking off honey to be extracted. We were only about half through a yard with extracting, and the robbers were getting so bad that it was next to impossible to do any thing. Robbers are bad in proportion to the size of the yard, and this was a good-sized one.

I took a tin dish and fixed it under the wheelbarrow in such a way that, with a small fire in it, it would send smoke up through the set of combs in the super on the wheelbarrow, and scarcely a bee would venture in. At first I thought it might injure the honey flavor; but if the right amount of smoke is used, and not too long continued, it will be entirely impossible to detect a trace of smoke in the honey.

Parma, Idaho.

H. E. CROWTHER.



## EXTRACTED-HONEY PRODUCTION.

## Straining the Honey.

BY W. Z. HUTCHINSON.

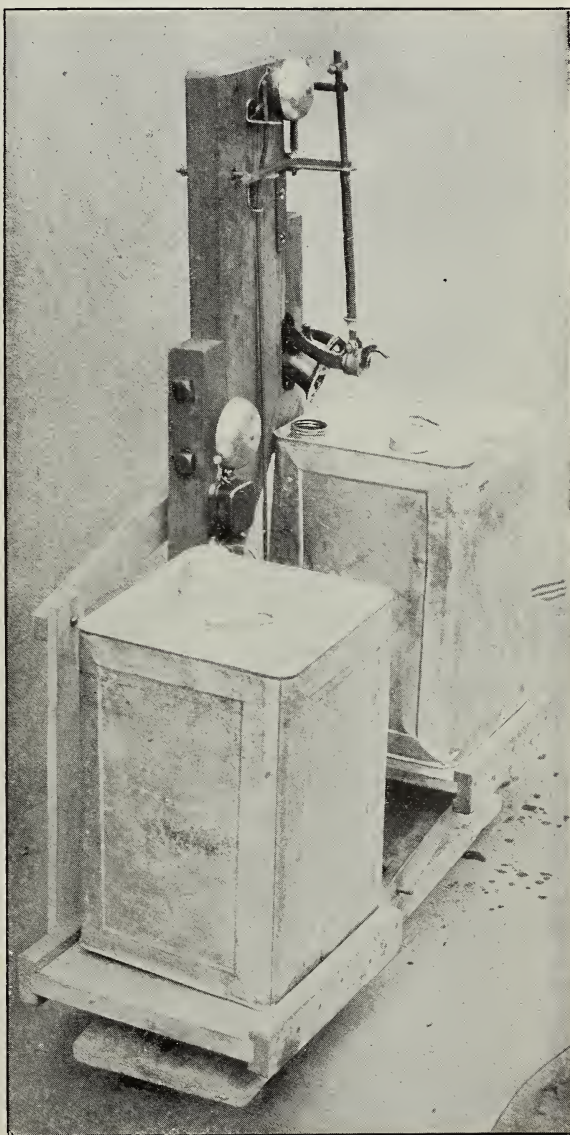
*Continued from last issue.*

An extractor with a strainer in the bottom probably possesses some advantages. One is, that it can be set at a less height from the floor, as no space has to be used for the strainer-tub. We have always used an ordinary galvanized wash-tub, with a honey-gate in one side near the bottom, and the top covered with cheese-cloth sewed to a wire hoop slightly larger than the top of the tub. We have several of these cheese-cloth strainers; and when one becomes so filled up or covered with pieces of wax that it strains slowly we remove it and lay it over another tub, or a barrel of cappings, until the honey has all drained through, when the accumulation of cappings and thick honey is scraped off with the honey-knife. I have been told that it would be better to have the cloth strainer more in the nature of a sack, nearly large enough to fill the tub and rest upon its bottom; then the sides of the sack would remain free from cappings; and act as a strainer without becoming clogged. In a horizontal strainer, such as we have been using, the trouble is that the cappings settle upon the strainer and soon clog it, while the sides of a sack, being perpendicular, remain free from cappings, and do not clog in a long time.

## FILLING THE CANS.

Honey produced according to the plans described in the previous articles is ready to go directly from the extractor into the cans or barrels; in fact, it is better that it should be canned up at once, as there is less loss of flavor or aroma. There is also a saving of time, as it is only necessary to remove a full can and put under an empty one while doing the work of extracting. To know when a can was full, without standing by watching it, was one of the problems that I had to solve, and I did it by using an electric alarm, on the principle of an electric door-bell; in fact, I used the identical outfit that is used for a door-bell. Almost every one is familiar with this arrangement that rings a bell when a current of electricity is sent through its mechanism. When the button in the door is pressed, an electric circuit is completed, and, as a result, the bell rings out in the kitchen, or wherever it is placed. If the complete filling of a can or barrel could be made to complete an electric circuit within which is

an electric bell, then an alarm would be given. I solved the problem by so arranging matters that the raising of the brass beam of a pair of platform scales closed the circuit. The battery used is one of the ordinary dry-cell batteries, such as are used for telephones, door-bells, or for furnishing a spark for a gasoline-engine. Be sure to get a good battery. If you can get only the cheapest kind, better get two cells and connect them, as the connections upon the scale-beam are



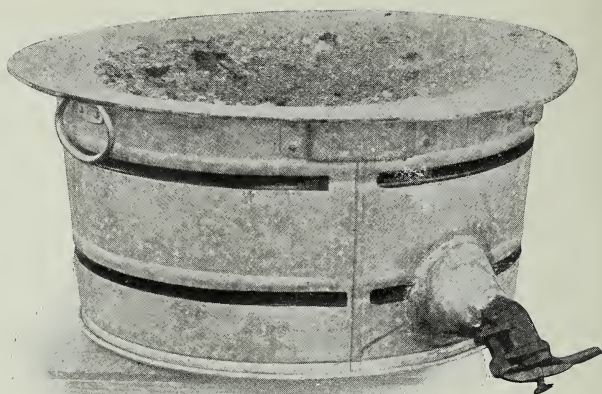
## PERFECTION DUPLICATING SCALES.

This arrangement not only weighs the honey but it closes the gate when the can is full, and rings a bell to let the attendant know that it is full. It can be used to weigh almost any size of package or commodity, duplicating the weight exactly, and doing the work automatically.

not as close as are usually made upon a door-bell, and it requires a good strong current to overcome these imperfect connections and ring the bell. It won't answer to depend upon a bell that does not *always* ring—better not have any bell at all. Connect the battery and the bell by means of the insulated wire that comes with the bell, then cut one of the wires in two, scrape off the covering for a distance of two or three inches from each end, wind one end around the brass beam of the scales, near the back end, then support the other end just slightly above the other end of the beam, when the latter is depressed. Put your can on the scales, set them to the desired weight, turn on the honey and go about your business, provided the business is not out of sound of the bell. As soon as the requisite amount of honey has run in, the beam will rise and touch the end of the wire above it, thus completing the circuit and ringing the bell. The scales may be set a pound or two short, and then set at the correct weight after the alarm has been given, and the filling completed.\*

**AUTOMATIC SCALES THAT CLOSE THE GATE WHEN THE CAN IS FULL.**

There is just one objection to the electric alarm just described, and that is, something may hap-

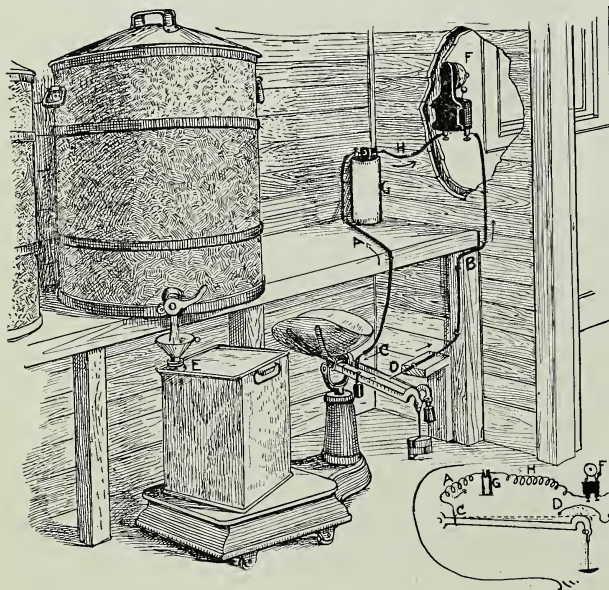


**CHEESE-CLOTH STRAINER ON TOP OF A TUB.**

This tub is set under the honey-gate of the honey-extractor, and the cans are filled from the honey-gate in the side of the tub. Extracting, straining, and canning are all in operation at the same time

pen unexpectedly, making the electrical connections imperfect. A bit of wax once got upon the beam of the scales, just under the spot where it ought to have touched the wire above when it raised, and great were the consequences. Thanks to the inventive genius of Mr. E. E. Coveyou, of Petoskey, Michigan, even this point has been overcome. He has perfected and used successfully what he calls his Perfection duplicating scales, which not only give an alarm when the can is filled, but actually close the gate in a positive, certain manner. Let me describe it:

First, there are two platforms suspended at the ends of a beam hung upon a pivot at the middle. This part of the machine is an almost exact duplicate of the druggist's balancing scales. Upon one of the platforms is placed a 60-pound can *full of honey*, or its equivalent in weight. Upon the other platform is placed the can to be filled. When the can becomes full it balances the can upon the other end, and thus it *settles down*. As it goes down it draws down a small brass rod connected with that end of the balance. The upper part of the rod is not straight, but bends out from the standard of wood to which the various parts are fastened. Just in front of the bent part of the rod is one end of an "elbow" of iron or steel; and, as the rod is drawn



**THE ELECTRIC DOOR-BELL ALARM TO INDICATE WHEN THE CAN IS NEARLY FULL.**

The plan of wiring up the battery, bell, and scales is here clearly shown. The contact at D is made when the beam lifts, connecting the electric current.

\* This plan is also clearly shown by the engraving accompanying Mr. Townsend's article, p. 761, June 15.



down, the bent portion presses against the end of the elbow that is in front of it, and swings it around slightly, thus throwing the other end of the elbow to the right, forcing it out of a notch cut in the side of an upright rod, the lower end of which is fastened to the upper part of the honey-gate. When this last-mentioned rod is thus released it quickly shoots downward, closing the gate. The force that causes it to shoot downward is a spiral spring, coiled around the rod between a "bulge" near its lower end, and a projection from the standard that comes out just below the "elbow" above mentioned.

As the rod goes down, a projection on its upper end catches the projecting lever of a little gong, causing it to give out a sharp ring. When the gate is again opened, the rod rises, the spiral spring is compressed, the end of the "elbow" catches in the notch in the side of the rod, thus holding it up, a little spring behind the left end of the elbow pulling the latter around and causing it to catch in the notch.

The honey from the extractor or from the tank, as the case may be, is brought to the gate through a rubber hose. When the gate is opened, the honey continues to run, of course, until the can is full, when it again descends, which pulls down the rod, thus forcing around the elbow, again releasing the rod having the spring, when down it shoots, cutting off the stream and ringing the gong.

As a double precaution, there is an electric bell that rings when the can is full and descends, thus making the connection. This bell rings continuously until the full can is removed.

#### DISPOSING OF THE CROP.

In my experience, such honey as this, thoroughly ripened, thick, rich, and aromatic, can be sold at from one to two cents more per pound than the ordinary honey thrown upon the market; but in order to do this the right class of customers must be found. Such customers will be found among those who buy honey for their own use, or to put it up for a retail trade. It will require some effort and some expense, however, to find these customers. You must advertise, and send out samples. Of course, this costs something; and if a man were to remain in the business only one year or for a short time, it might not prove profitable—probably would not; but a man can gradually build up a trade and secure a class of customers who will eventually buy his honey without any advertising. After I had advertised only one year, and sent out samples and filled orders, I began receiving orders the next year from my customers of the previous year. They did not even ask for samples; they said, "If your honey is like that of last year, you may send me so many cases," and they sent on the cash.

Now, friends, isn't it worth while to have such a trade—to be able to sell your honey, year after year, to the same men, those who willing to pay you from one to two cents above the

market price, and send cash with the order, because they *know* that no finer honey can be produced, and that it is worth what you ask for it?

The whole thing can be told in a few words: Produce honey of a superior quality, and then let consumers know about it—the latter is fully as important as the first.

Flint, Mich., March 13.

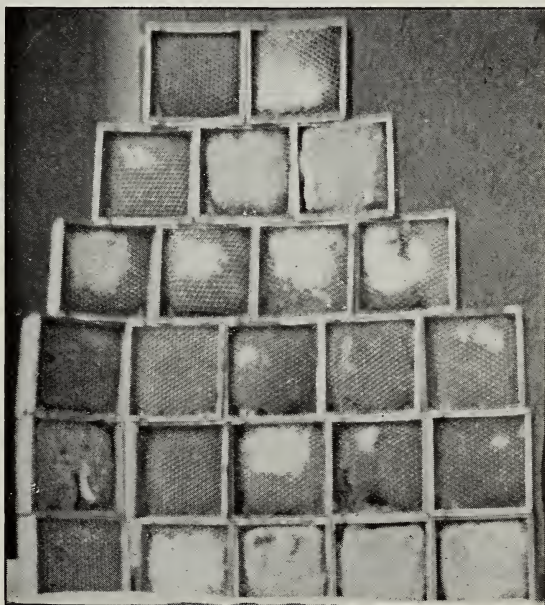
*To be continued.*

## ANOTHER INSTANCE OF DISHONESTLY GRADED HONEY.

BY S. J. GRIGGS.

We inclose you a photograph of a case of honey which we received in the car of honey which we bought from the ——— Co., of ———. We found in looking this honey over that we had about 200 cases of this class of goods. The four bottom sections were placed along the glass in order to hide the rest of the honey and to deceive the purchaser. We have written these people several times, and on the 200 cases we secured a refund of \$150. A case of this honey originally cost \$3.50, so this leaves us a cost of \$2.00 per case, which you know we could not get for it. We found a card in several of these cases of the ——— producers, ———; and we are satisfied that a large percentage of it came from them. Mr. N. E. France has written them several times, and we are having some correspondence back and forth, but the eastern dealers must do all in their power to stop this practice, as it is certainly an outrage for people to have such stuff as this poked on their hands.

We think you can do considerable good by



A SAMPLE OF DISHONESTLY GRADED HONEY. The four full sections at the bottom were placed next to the glass to deceive the purchaser.

putting this in GLEANINGS; and while you can do as you like about mentioning any names, they ought to be shown that this matter has got to be advertised if they continue this kind of work.

Toledo, O., April 30.

[We have suppressed the names for this time, but desire to warn the parties that if this kind of work is repeated again we shall give the names the prominence they deserve. The question may arise, "How will the parties know they are the ones referred to?" The "shoe will fit" when it is tried on. If it doesn't, it won't need to be worn.—ED.]

### A NON-SWARMING RACE.

#### What Can be Expected of Such a Bee? Some Statistics to Show the Percentage of Swarms in Several Apiaries in Switzerland.

BY DR. BRUNNICH.

On p. 1554 of GLEANINGS for 1907 Dr. C. C. Miller, in speaking of our race of Swiss bees, says, "If not more than two or three in a hundred colonies are likely to swarm, I'd like a queen of that stock, no matter how black."

This note induces me to tell something about swarming in our country, where the conditions for the crop are, I think, not greatly different from yours. Our principal crop lasts till the hay harvest—middle of June; after that, but little honey comes in except in localities where there are great forests. In earlier times, when bees were kept in straw hives, and when sugar was too dear for feeding, the colonies swarmed but very seldom; and when they did swarm it was not later than the middle of May. This is accounted for by the process of selection and acclimatization, because bees that swarmed much and late would die and not propagate. So it was that our grandfathers had a stock which began to breed very late (end of March); but they would then breed with great intensity to be ready when the honey harvest began. After the harvest, the brood began to diminish; and in August there was but very little brood in the hives. This bee, so well acclimatized, possessed a great longevity, and, in consequence, the hives were always full of bees, though there was but a small amount of brood.

Then the movable frame came to our land, and, soon after, a great many of our bee-men were seized by a certain disease—the mania for strange races of bees. They imported Cyprians, Italians, and especially the gentle and productive Carniolans. This disastrous blending of our stock with strange blood generated, in most bee-yards, a deterioration of the bee, and bee-keeping in straw hives gave such poor results that they began to diminish rapidly. The Carniolans brought us a mania for breeding and swarming, and the Italians destroyed the harmony of the brood-nest by the changed conditions. Those Italian hybrids began to breed very early in the year, and hence had great losses in spring; further, they were short-lived in our climate, so that they were poor in numbers though rich in brood. Many a bee-keeper "crossed" himself

about the quickness of the stiletto and the cleptomaniac of the Italian bees. By the way, I can not sufficiently emphasize the fact that our black race, as well as the Italian and Carniolan, is very gentle if purely bred; but nearly all hybrids are very cross.

When Mr. Kramer, and others later on, recognized the superiority of our native stock it was, fortunately, not too late. There still existed many remote bee-yards where were found the old home-bred bees with their noble qualities. They were supported by the great *hardiness* of the race, which tended, in spite of all intermingling of foreign races, to hold its own against the other races. By the aid of rational breeding, thanks to our mating-stations, we now have in many bee-yards a good number of queens—enough to satisfy all reasonable demands. I have some queens in my bee-yard which cause the heart of the bee-man to leap at any time of the year, particularly at harvest time—queens whose genealogy is noted in my books for several generations back, including that of the drones also. Their bees are exceedingly long-lived, as



FIG. 1.—DR. BRUNNICH, OF OTTENBACH, SWITZERLAND, IN THE ACT OF HIVING A SWARM.





FIG. 2.—A SWARM IN A VERY INACCESSIBLE PLACE.

Notice at the right a small cluster of bees around the caged queen.

are the queens. They begin breeding late, but then breed with vigor, so that in a few weeks the hive is full of bees. The brood-nest in spring is wonderfully regular. It is one of those queens that lived eleven months with her daughter in the hive. We do not clip our queens; but about five years ago I began to put on every queen a distinguishing mark every year, varying with different colonies.

How about the percentage of swarming of our stock? Dr. Miller demands not more than 3 per cent from all colonies. What does that mean? Let us suppose 100 colonies which are never requeened, but which supersede themselves at the proper time throughout many years. Then they ought, in 100 years, to swarm 300 times (3 per cent supposed). One colony, therefore, in 100 years swarms 3 times—that is, once in  $33\frac{1}{3}$  years. Well, doctor, you demand a stock which supersedes ten to twelve times without swarming. Then it is allowed to swarm, but afterward will have to support itself for 33 years, and so on. I think, doctor, this is asking a little too much, is it not? I must confess that our old stock, when

still dwelling in little straw hives, swarmed oftener than every 33d year, and it was, indeed, compelled to do so. With the uncertainty of the honey harvest, and without feeding, these colonies would have diminished rapidly.

How is it to-day with the swarming of our best stock and with the movable frames? It is sure that our large hives are fit to restrain swarming; but, unfortunately, there is no bee-yard that has pure stock for a number of years. The purifying of a race takes many years; although the conditions with the bee are most favorable at mating-stations, yet scientific experimental breeding is not practiced much longer than about ten years. I myself have reared queens for only seven years, and therefore I can not give a decisive judgment. But I can, however, give you some statistics. Mr. Spuhler gives me the results of the past seven years in the field of the association of bee-keepers of Zurich and surroundings. Of these, in the year—

|       |                    |             |          |
|-------|--------------------|-------------|----------|
| 1900, | 2733 colonies cast | 569 swarms, | or 20.8% |
| 1901, | 3110 colonies cast | 162 swarms, | or 5.2%  |
| 1902, | 3158 colonies cast | 145 swarms, | or 4.6%  |
| 1903, | 3116 colonies cast | 351 swarms, | or 11.0% |
| 1904, | 3441 colonies cast | 321 swarms, | or 9.4%  |
| 1905, | 3706 colonies cast | 488 swarms, | or 13.2% |
| 1906, | 4020 colonies cast | 590 swarms, | or 14.7% |

This gives an average of 11.3 per cent of swarms. But you must remember that it was not 11.3 per cent of the colonies that swarmed; for, taking care of the after-swarms, it might, perhaps, be 6 or 7 per cent of swarming colonies. Further, it must not be forgotten that, in the case of about 3000 or 4000 colonies, there were still a great many hybrids; and last, but not least, not all the bee-keepers were experienced enough—perhaps not even willing—to suppress

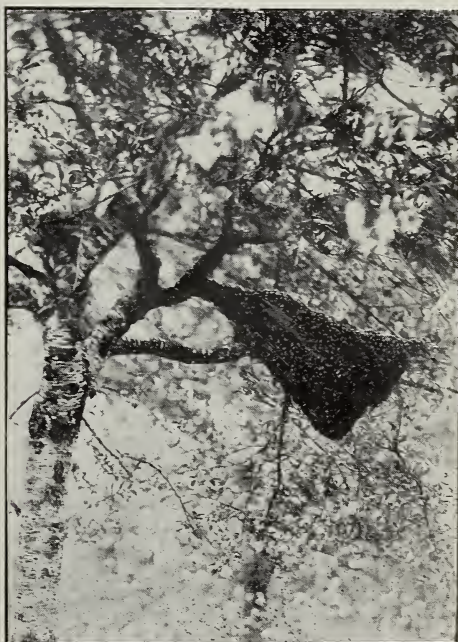


FIG. 3.—THE BEES OF THE SWARM SHOWN IN FIG. 2 IN THE NEW POSITION OVER THE QUEEN-CAGE.



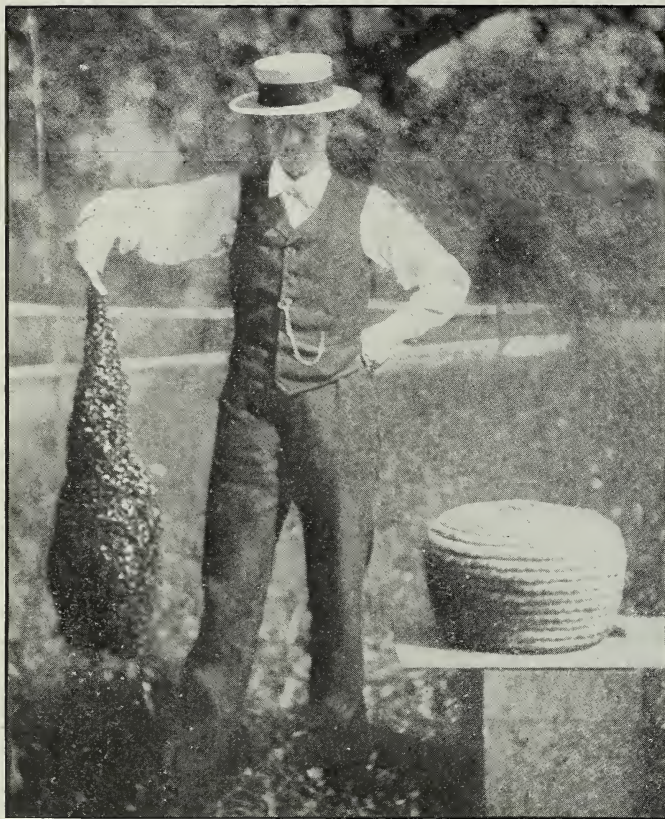


FIG. 4.—DR. BRUNNICKE'S SON ABOUT TO PLACE THE CLUSTER IN A HIVE.

swarming as much as possible. It is a well-known fact that a skillful apiarist will reduce swarming by not giving much drone comb, by enlarging at the proper time, etc. I think, therefore, that Dr. Miller will not be totally dissatisfied with these figures.

Mr. Spuhler, an old, experienced, and able apiarist, tells me that his average of swarms in those last years (he has 100 colonies at home and in two or three outyards) is about 6 per cent, or of swarming colonies about 4 per cent.

I can give you still better results from another friend of mine, Mr. Serf, also an experienced queen-breeder. He gives me the following figures, having in one single yard about 60 colonies (in our country you can not have profitably more than 60 colonies in one place).

|                      |                      |
|----------------------|----------------------|
| 1898, 12% of swarms. | 1903, 0% of swarms.  |
| 1899, 0% of swarms.  | 1904, 2% of swarms.  |
| 1900, 2½% of swarms. | 1905, 5¼% of swarms. |
| 1901, 0% of swarms.  | 1906, 1½% of swarms. |
| 1902, 4% of swarms.  | 1907, 5% of swarms.  |

This gives for the last ten years 3.3 swarms from 100 colonies. What do you say to this, my good Dr. Miller? Mr. Serf has, like myself and many others, a short honey harvest; but he has a good one because he has a very fine stock of bees.

That you do not possess in America a satis-

factory race of bees is no enigma to me. It is due to the mania for new races and the roaring "tam-tam" of recommendation of foreign races that it is impossible for your bees to assume a fixed type and to become acclimatized.

And now a few words to Dr. Miller concerning page 36. You wonder how I can have the arrogance to say "that I am not yet convinced that a pure strain of blacks would not be the best for you under *your* conditions." I will tell you. In GLEANINGS for 1905, page 370, you can read a most interesting notice from Mr. L. H. Scholl, of Texas, whom I consider from this note alone to be a very clever and scientific queen-breeder. He told you that he possessed an exceedingly fine strain of blacks — fertile queens, excellent honey-gatherers, and — think! *gentle* bees. Queen-rearing was then an easy thing, thanks to the stability of his race. But it was otherwise when he introduced the beautiful yellow bee. In brief, the introduction of the Italian bee signified for him the deterioration of his

bee-yard. Well, doctor, should not that which is possible in Texas be possible also in a northern climate?

A word about Berlepsch, who seems to be totally unknown to our American colleagues. In the "History of Bee-keeping," by Bessler (1885) the author says: "Through his book, 'The Bee,' the best existing apistic work till now, he has acquired immortal fame; and as long as bees continue, the name of Berlepsch will shine with the greatest splendor." Berlepsch invented the frame in 1852, some years after Dzierzon had given us the movable comb, which was fixed only at the bottom in a rabbit. Undoubtedly, in regard to the movable frame he was to Europe what Langstroth was to America. It is true it was Dzierzon who gave us the theory of parthenogenesis; but it was Berlepsch who, by the aid of Leuckart and Siebold, *proved* this theory to be true and gained the general acknowledgment of the scientific world to it. It was, indeed, with unflagging zeal that he investigated and solved the finest problems in apiculture; and what he claimed, he proved by numerous experiments backed by an exceedingly keen intelligence. It is a great pity that his work, "The Bee," is quite unknown in America, for even to-day it is a great delight to read this old book with its im-



mense number of interesting details concerning bees.

I do not quite understand W. K. M.'s remark, "France is not one whit behind Germany in scientific research, and yet it does not accept German ideas any more than we do," etc. Please look at Cowan's "Honey-bee," chapters on parthenogenesis, digestive apparatus, structure of the glands, etc., and you will find that, notwithstanding your assumption, a great many German researches have been accepted by all nations. But these are useless quarrels. We had better take the good, wherever we may find it, be it in Russia or America.

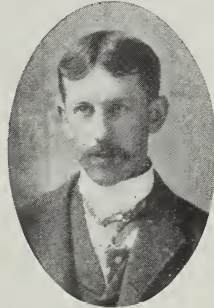
Ottenbach, Switzerland.

### THE DEVELOPMENT OF LOCAL BEE-KEEPERS' ASSOCIATIONS.

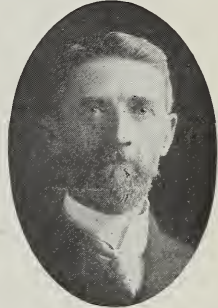
BY R. F. HOLTERMANN.

There is developing in Ontario a strong activity in the county or local bee-keepers' association, and the movement is receiving every encouragement from the Department of Agriculture. Our province (in standing equal to one of the States of the Union) gives to the various agricultural bodies such as bee-keepers, fruit-growers, vegetable-growers, dairymen, short-horn, Ayershire, horse-breeders' associations, an annual grant. This grant is in proportion to the importance of the industry and to the use the association makes of the money contributed. I must confess, when I see the results we obtain from this help, that it is a matter of surprise to me that the States of the Union do not adopt the same policy. The outlay, after all, is not great, and yet it is the very thing needed to give foundation for co-operative action to those interested in the development of the various branches of agriculture. I feel sure that all that is required to secure this system or policy in the United States is a brief, active, and energetic campaign on the part of those interested. If such demand such aid, it will be given by the state.

That the desire for such help is strong, I know from coming in contact with people on the other side of the line. The feeling, however, appears to be that *this is not the general policy of the state*, and therefore there is no use in looking for a grant. Let the agricultural body at large ask for it; let the agricultural press take it up; let



E. T. BAINARD, SECRETARY  
AND TREASURER OF THE—



E. J. MILLER, PRESIDENT OF  
THE—  
MIDDLESEX CO. BEE-KEEPERS' ASSOCIATION.

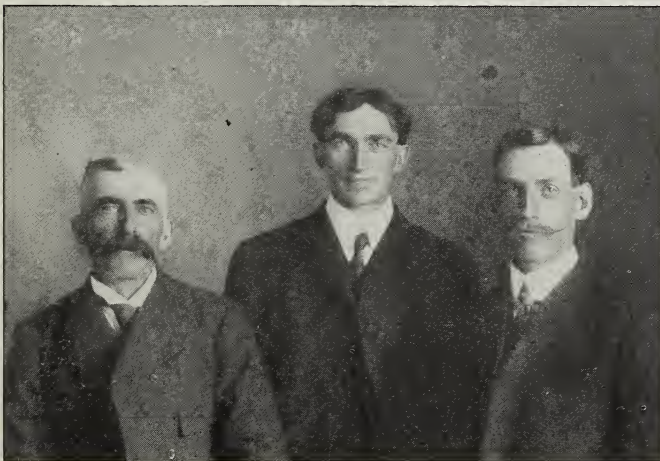
them point out that agriculture does not receive the assistance that its importance demands, and the help will come. Our Ontario Bee-keepers' Association receives a grant of \$500 per annum. It gives \$200 per annum, to be divided between the various local or county associations in affiliation with itself. So far this has given the affiliated society from fifteen to twenty dollars of a grant.

The payment of one dollar gives a bee-keeper membership in the affiliated society, also in the Ontario, and has given each member the premium a member of the Ontario receives, which has in the past been a journal, a smoker, or a queen.

The local society can not become affiliated with the Ontario until it has at least ten members who also, as per the above, become members of the parent society, and the grant given it must be spent in certain specified ways in keeping with the advancement of bee culture.

The Department of Agriculture, I believe, is prepared to help bee-keeping more than it has, and I think it is prepared to give the Ontario association a larger grant if it can use the money to advantage, and if the affiliated societies become more numerous and active, the Ontario should give a larger grant to encourage this activity, and the latter will then be able to submit the best possible plea for more money.

In addition, the Superintendent of Farmers' Institutes, Mr. G. A. Putnam, is providing lecturers to affiliated societies.



OFFICERS OF THE SIMCOE CO. BEE-KEEPERS' ASSOCIATION.

JOS. MCGINNIS.

DENNIS NOLAN.

C. H. WILSON.

ties. This has been done in New York, Pennsylvania, Wisconsin, and other States for years, and this movement will, no doubt, increase the usefulness and number of the local societies.

Those of us who have been in close touch with association work realize that State and provincial associations, in affiliation with the National, are desirable and necessary in order to give greater strength and influence to the National. It is also desirable and necessary in order to reach the largest number of beekeepers. In order to carry out the greatest educational campaign, and reach, as it were, the very door of the beekeeper, we must have county or local associations in affiliation with the State or provincial organizations, and these, again, with the larger. We realize that there is something needed to make bee-keeping a more permanent business with half of the bee-keeping population. Let us treat the industry more seriously and it will reward us.

#### RECENT LOCAL CONVENTIONS AND SOME OF THEIR OFFICERS.

On April 18 the Simcoe County Bee-keepers' Association met at Barrie. The attendance was good. Reports handed in indicated that bees had wintered well—probably not more than 10 per cent having perished, and these died on account of having improper stores for winter. Three members had their bees still in winter quarters. As is generally the case in Ontario, an unusual quantity of stores had been consumed by the bees

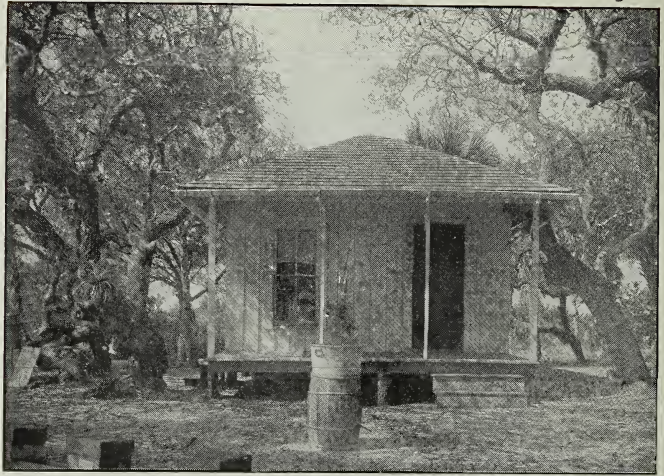
during the past winter. R. F. Holtermann was present, and in speaking on the subject assigned him, "How to increase the average yield per colony," gave some of the following points: Give more and better stores, contracting the combs to the strength of the stock, for winter. When possible, shelter the apiary from prevailing winds. Use larger hives; shade and ventilate hives and prevent natural swarms, and thus have more uniform colonies; pay more attention to blood in bees.

Pres. C. H. Wilson acted as chairman, and Dennis Nolan, who is also a director of the Ontario Bee-keepers' Association, made an excellent secretary.

#### MIDDLESEX BEE-KEEPERS.

The above association met at London with Pres. Miller in the chair, who is also president of the Ontario Bee-keepers' Association. In relating experience, Mr. Kimball described a bee-house for wintering bees above ground. It had a four-inch hollow wall in the center, with 12 inches of sawdust inside and 8 inches of sawdust packing outside, giving four walls of lumber. In reply to a question, he admitted that sometimes the temperature varied greatly in a short time, but he did not find that this injured the bees. An inlet and outlet for fresh and foul air was provided.

John McEwen related his experience in wintering bees packed in outside cases or summer stands, and showed pretty conclusively the desirability of hav-



NO. 2.—A. I. ROOT'S "CABIN IN THE WOODS" ON OUR ISLAND NEAR OSPREY, MANATEE CO., FLA. SEE ARTICLE ON ANOTHER PAGE.



NO. 3.—A. I. ROOT'S "COTTAGE IN THE WOODS" NEAR BRADENTOWN, FLA.



ing the bees sheltered from cold winds during the winter. In the spring, as soon as weather permitted, he filled the combs next to the sides of the hive with syrup (two of sugar to one of water). This resulted in the development of much early brood.

E. Bainard, the secretary, advocated stimulative feeding in late summer, where there is no honey-gathering by the bees after basswood. He had found that old queens would not lay, and young queens would lay; but in the latter case the bees would not rear brood from the eggs deposited.

#### SALT AND WATER.

Robt. Wallace, Jas. Armstrong, F. A. Gemmell, and John McEwen all strongly advocated giving bees regularly salt and water, a tablespoonful of salt to an imperial gallon of water.\* Mr. McEwen stated that the day previous to the convention his bees had taken up 8 gallons of this water by means of feeders set out in the apiary by him.

D. Anguish and F. A. Gemmell strongly advocated flax chaff for packing for bees wintered in outer cases.

Quite a discussion took place in connection with foul brood, and the following resolution was passed unanimously: "That the Middlesex Beekeepers' Association would earnestly point out the need of a larger government grant and more inspectors to stamp out the disease known as foul brood."

R. F. Holtermann, in recognition of services rendered, was elected an honorary member of the association.

In connection with the above resolution the following announcement has appeared in the *Farmer's Advocate*: "At least as many foul-brood inspectors will be engaged this season at last, and probably one or two additional."

Brantford, Ont.

### BEEES STORING HONEY BELOW THE BROOD.

Do they Ever Do it if there is any Room Above?

BY J. E. HAND.

I am pleased to note that Dr. Miller, p. 1488, 1907, does not wish to go on record as saying that bees in Illinois are as likely to store their honey below the brood as above it. He even goes so far as to say that their general preference is to store it above the brood. However, I prefer to call it instinct. Now, if we admit that the general preference, habit, or instinct of bees is to store their honey above the brood, then we must look for some cause other than general preference, habit, or instinct that would lead or compel them to do right the reverse. I can think of but one

\*Let our United States friends remember that their standard measure is what we call *wine* measure; ours is *imperial*, which, of distilled water, weighs 10 lbs. I have been somewhat amused by a well-known United States bee-keeper's reference to the mistakes of Canadians as to the number of pounds of honey in a gallon. He stated that a Canadian scientist had given this as 10 lbs. I venture to say the scientist said *distilled water*, not honey. Again, the actual weight of fully-ripened best-bodied honey, imperial gallon, our measure, will be found to be what Canadians state.

thing that would cause bees to go counter to their natural instincts; and that is, an abnormal condition of the colony, which may be brought about in various ways. However, I am inclined to the belief that in Dr. Miller's case the cause was a played-out queen.

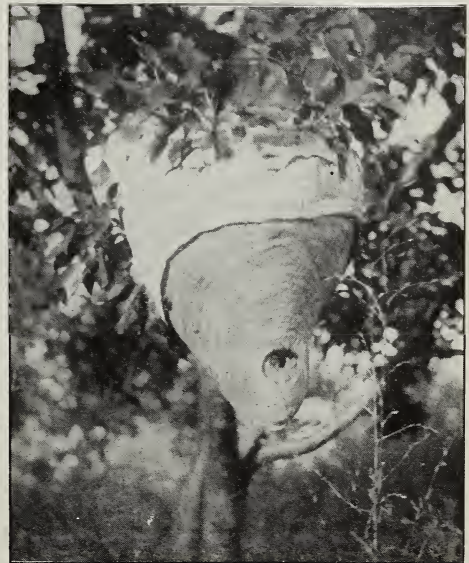
I would consider the act of storing and capping honey below the brood with plenty of room above it as *prima-facie* evidence of an abnormal condition of the colony, and for this reason a colony that would so store and cap honey would not be in condition to remove it quickly, since a vigorous queen is the all-important factor in this operation. I hardly think the doctor will care to say that those colonies were in a perfectly normal condition after what he has been saying of late about his superior strain of comb-honey makers, for it is needless to say that such colonies would be of no account for comb-honey production. However, if he will say that such was their condition, then I will cheerfully modify my statement to which our good friend takes exception.

Birmingham. Ohio.

### THE NEST OF THE BALD-FACED HORNETS.

BY E. F. ATWATER.

The nest shown was about 18 inches long, and still being enlarged along the line where a careful search will show one of the inmates at work on the left-hand side. The insects are here call-



NEST BUILT BY BALD-FACED HORNETS.

The nest was 18 inches long and still unfinished.

ed "bald-faced hornets," and the adjective *big* is also always applied. They are almost as large as small bumble-bees, and not fierce unless disturbed. Near by was another and smaller nest of later establishment.

Meridian, Idaho.

## ARE BEES REFLEX MACHINES?

Experimental Contribution to the Natural History of the Honey-bee by  
H. v. Buttel-Reepen, Ph. D. Translated by Mary H. Geisler.

*Continued from April 1st issue.*

### MEMORY OF PLACE IN BEES.

In general, we should not set up a new unknown force to explain natural phenomena until it has been proven that they can not be explained by the known forces.—*Aug. Weismann, Keimplasma*, p. 539.

According to Bethe, bees are "led back to the hive by a force entirely unknown to us. This force does not adhere to the hive itself, and it does not lead bees back to the hive itself, but to the place in space which the hive usually occupies. It does not act at boundless distances. It is an old experience of bee-keepers that they can take a colony to another stand without fearing that the bees will return to the old place, if the new spot is only more than six kilometers from the old. It follows, then, that this force acts at most at a distance of six kilometers, since the impulse to return to the hive is the strongest of all impulses in bees. But I believe that the zone of action of the force is not a circle with a radius of six kilometers, but of only between three and four kilometers. If the circle had had a radius of six kilometers, then the bees of the transposed hive would be back into the circle of action if they got more than half that distance near the old position in foraging, and would have to return to the old place. But this only happens if the old position is less than six kilometers away from the new. We must, therefore, accept something near three kilometers as the boundary for this circle of action for this force." (Bethe, l. c., p. 89.)<sup>57</sup>

I believe that in the foregoing, and likewise in many other of his observations, Bethe furnishes such excellent proof of the existence of memory for location that one can hardly wish anything better. But Bethe supposes "a force unknown to us," with which we do not know what to do, which offers support for every investigation. Under this head I must depend more strictly upon Bethe's work in order at the same time to point out the errors in the chapter, "How do Bees Find the Hive?" (Bethe, l. c., p. 72.)

### THE "PATHS" OF BEES AND THEIR DIRECTION.

If bee-hives are placed on an open heath, with no elevations such as trees or bushes, the particular kind of flight toward and away from the hive may be studied, undisturbed by local conditions. In August, 1898, I had opportunity to prove this condition on a moor in the neighborhood of Oldenburg, corroborating entirely my earlier experiences.

The colonies were established on the moor by the bee-keeper shortly before the buckwheat-flow. The hive-entrances faced the east. On the first day the flight was weak, for as yet there was nothing to gather. The bees flew out irregularly in smaller or larger circles in all directions. There was nothing to be seen yet of "a path."<sup>58</sup> Great buckwheat-

<sup>57</sup> The "unknown force" must act at much greater distances under certain conditions, for other observations show that bees have flown five, six, or even over seven kilometers further under extraordinary circumstances. (See *Bienenzeitung*, X., No. 14; ditto III., No. 9, Dzierzon; Le Rucher, Amiens, 1876, IV., p. 30). In these cases there was no forage near at hand. According to Dzierzon, some bees under these circumstances scented a large "hundred-acre" rape-seed field which lay far outside their usual circle of flight. Roth, the leader of the Baden school for bee-keepers, in Durlach, observed that some of his bees returned in thirty minutes with full loads from a buckwheat-field six kilometers away. Granting that Roth's bees flew to the buckwheat-field from the south, there is no reason for thinking that bees from an apiary at the same distance toward the north had not hastened to this same nectar supply. Now if, for experiment, a colony should be taken from the southern apiary to the northern one, then they fly south to the buckwheat-field, and there, coming into the field of action, would again return to the southern apiary. The "unknown force" would reach twelve kilometers in this very possible case. If it be asked from what distance bees can find their way back, the answer can not be made in kilometer measurements, for it depends upon whether the bees in their flight of orientation (see the same) or in their search for food have flown to greater or less distances, upon the definite direction of the forage and the general orientation.

<sup>58</sup> "It is well known that, in front of the entrance to a strong colony, there is always a long dark cloud formed by the bees constantly going back and forth." (Bethe, p. 75.) This is Bethe's "bee-path."



fields stretched toward the north as well as to the south. When the flowers opened, the mode of flight changed. Part of the bees flew from a point close to the entrance, sharply to the left (north) and another part sharply to the right (south). In consequence of this the paths were very short, the terminations (the hives stood close to each other) coming together in a common wave.<sup>59</sup> It is apparent from this that the position of the pasture determines the direction of the flight in and out.

When, later, the buckwheat-fields ceased blooming and the moor was in full bloom, the same short, though perhaps a little lengthened, paths were seen; but the common wave was higher and apparently somewhat larger, from the great numbers hastening in from all sides.

"Long paths" of bees, which Bethe describes as normal, are found chiefly only in the case of bees in gardens where trees, houses, etc., modify the flight. The view is wrong (Bethe p. 80), that "it is a well-known fact to bee-masters that the steepness of bee-paths varies with the weather."<sup>60</sup> It is an error further, that "bee-paths always go out from the hive in the same direction with slight fluctuation. This is almost always east, southeast, or south. Not only for this reason, but also because bees need sun to be industrious, the bee-keepers place their hives toward the south or east." (Bethe, p. 81.) This last assertion is erroneous.<sup>61</sup>

It is clear from the above, even if Bethe had not stated it himself exactly, that there was nothing in the north for his bees to gather, since they never flew north (see Bethe's following conclusions). In that case the town (Strassburg) must spread out northward from the place of Bethe's investigations. Bethe supposes that the town remained "unknown" to the bees.

"The garden of the Physiological Institute in which my bee-hives stand lies close to the town wall. The wall is covered with green, and behind it stretch great blooming meadows which teem with bees. On the other side of the Institute lies the city. There are very few and very small growing plants in the city; and, in spite of many searches, I have only once seen bees in the inner part of the town, on two isolated sunflowers. At all events it must be admitted that only a few isolated individuals have been in the interior of the city at any time in their lives, particularly as my bees always fly toward the south to the meadows." (Bethe, p. 86.)

I must consider these assertions also as erroneous and not conclusive, for the handler of sugar wares, honey-sellers, gingerbread bakeries, and housewives who leave sweet preserves or jars of honey in the open windows well know they have to count upon much unpleasantness from visiting bees.<sup>62</sup> There is not always something to be gathered from the meadows (pause in the honey-flow, the cutting of the field); and, besides that, bees in their first flight, which is devoted to orientation, orient themselves not only toward the side of the pasture but naturally on all sides.

Bethe then let bees fly in the streets of the city, only within the short distance of 350, 400, and 650 meters from the hive, in spite of the "unknown force" which acts,

<sup>59</sup> I noticed that bees of one and the same hive followed both directions.

<sup>60</sup> I admit that the French boy learns in his lesson:

"Quand les abeilles volent en haut  
Nous aurons bientôt de l'eau."

But this probably national idea is just as wrong as the one that a hard winter is to be expected if bees propolize entrances strongly. In general, many statements to be found in the literature on bee management should be taken with prudence. Safe judgments can be made only after a personal experience of many years.

<sup>61</sup> Dathe, *Lehrbuch der Bienenzucht*, 5 Aufl., p. 34, and following, Bensheim, 1892: Berlepsch-Lehzen, "Bienenzucht," Berlin, 1899, p. 28, and following; "Bienenzeitung," 2. Ausg., Nördlingen, 1861-'62, 2 Bd., p. 3 and following; v. Berlepsch, "Die Biene und die Bienenzucht," Mühlhausen, 1860, p. 219 and following; Dzierzyn, *Rationelle Bienenzucht*, Brieg, 1861, p. 36, etc.

<sup>62</sup> Because of this kind of trouble, bees are forbidden in the precincts of the city of Paris. The Bw. *Centralblatt*, No. 19, 1899, announces: "In a small city a broker had stored comb from colonies with foul brood in a room accessible to bees. The following year almost all the apiaries of the city were infected," etc. During the dearth of nectar, specifically in Bethe's case, the flying in the town where there was always something at which to nibble might have been more vigorous than to the fields where nothing could be obtained. Moreover, Bethe himself furnishes a good reason that bees flew extraordinarily accurately through the city, for he asserts that he "had seen bees inside the city upon two isolated sunflowers." How very inquiring the bees must have been to find a single flower! We can be very sure that innumerable bees (even if not seen by Bethe) followed the same instinct which drew these sunflower visitors into the city, for there are no recluses among bees, none, which separate themselves from the masses to follow a way of their own, and all possess the same kind of instincts. A single linden-tree in bloom in the city is enough to attract hundreds of thousands of bees.

according to Bethe, within a distance of three kilometers. Because, when let go, these bees found their way home just as well as those from the meadow, he decides that "there can be no doubt at all that bees find their way back to the hive, *not* by means of memory pictures" (Bethe, p. 89).

I cannot find in the foregoing the slightest foundation for this view of Bethe's. If he wishes to disprove the investigations of Romanes,<sup>63</sup> then I think the attempt is unsuccessful, for Bethe leaves to us the proving that the city has remained actually "unknown" to the bees.<sup>64</sup>

But how is the mysterious behavior in the streets explained? We shall let Bethe speak for himself: "All bees, if let fly, go upward in a corkscrew line, then suddenly take a direction and fly off in a straight line. This happens when bees are let fly in the city streets almost always before they have reached the levels of the house roofs. It often happens at a height of four to six meters above the street level, therefore generally before they can have acquired a view of the neighborhood. Now, almost without exception, they take the direction of the Institute, where the hives are."

Before I give the explanation for this, other parts of Bethe's account continue: "Light is the incentive to flight in these diurnal animals" (Bethe, p. 83); further, "Light regulates flight."

I remember, too, in Herm. Müller's investigations that he could carry a bee in a drinking-glass, open beneath, the length of the garden without the bee flying out, for it constantly pressed to the top of the glass toward the light.<sup>65</sup>

I slipped a bee into a reagent glass and put it upon the window-sill so that the bottom of the glass was toward the window. For eight hours the bee strove inside the glass in vain efforts to reach the light. Then it died, although it would have been easy to crawl out of the open tube and fly out of the open window.

Now, if we remember that the city lies to the north of the seat of Bethe's investigations, we shall see that the sun must be in the direction of the Institute, and the bees were let fly in "quiet, sunny weather" (Bethe, p. 87). In the darker streets, perhaps unknown to them, they tried to orient themselves by mounting in circles, just as a carrier pigeon does.<sup>66</sup> Then they fly instinctively toward the bright source of light (just as in a room they fly unfailingly toward the bright window) until they became oriented in familiar regions. "Light regulates flight" (Bethe, p. 83).

I, therefore, can not consider the "unknown force" and the conclusions based on it as capable of proof.

I have held to Bethe's assertions with regard to these directions. From them I understand that on one side of the Institute toward the south are the meadows; and on the other (therefore toward the north) is the city. Possibly Bethe did not liberate the bees just in the center of the city but toward the edge, so that the Institute was shifted from its southern position a little toward the west or east. Further investigations might be necessary, perhaps, to prove that these bees did not return to the hive not through the "unknown force."

We learn from Bethe (l. c., p. 87) that eight marked bees were let fly in the city

<sup>63</sup> Romanes, *Nature*, 1885, Vol. 32, p. 630, *Homing Faculties of Hymenoptera*.

<sup>64</sup> That Bethe's idea that bees had not been flying in the city is not at all convincing, follows from something written by the editor of "Elsass-Lothring. Bienenzüchter," Karl Zwilling, which reached me subsequently. In my publication in the "Biologischen Centralblatt" the same is given, therefore, in a later passage. I quote the following: " \* \* \* Outside of Strassburg there are many apiaries close to the wall, the bees of which never think of flying into the city except in times when there is no forage. Then they enter the candy factory of Mr. Pale, Tiergarten Strasse, and annoy the workers as well as partake of the sweets. Even in the month of December, 1899, in the warm sunshine I observed bees flying in the middle of the city on the Kleberplatz, where hundreds of pots of flowers were displayed for sale. There they gathered honey and pollen. Every year some swarms fly into Strassburg and hang on the chestnut, linden, oak, and locust trees found in many parts of the city, and once a swarm hung on the showcases of a glove-store near the cathedral. When the trees bloom, bees fly about them vigorously. In the interior of the city there are beautiful rows of chestnuts along the Ill, rows of lindens around the Kleberplatz, etc., all of which are sought out by the bees when they are in bloom. The honey-venders and those who deal in sugar wares are not molested if they keep their wares covered. As I live in the neighborhood of Strassburg (ten minutes by rail), and have been President of the Bienenverein there for thirty years, I know the conditions exactly."

<sup>65</sup> Herm. Müller, *Versuche über die Farbenliebhabelei der Honigbiene*, Kosmos, Jahrg. 6, p. 276, 1882.

<sup>66</sup> H. E. Ziegler, *Die Geschwindigkeit der Brieftauben*, Zoolog. Jahrb., X. Bd., 1897, pp. 99, 278.



on a quiet sunny day at distances of 350, 400, and 650 meters from the hive. The result is as follows, from an observation of twelve minutes at the hive entrance:

| Distance of<br>350 meters. |         | Distance of<br>400 meters. |         | Distance of<br>650 meters. |          |
|----------------------------|---------|----------------------------|---------|----------------------------|----------|
| 1.                         | 1½ min. | 1.                         | 5 min.  | 1.                         | 4¾ min.  |
| 2.                         | 2¼ min. | 2.                         | 7 min.  | 2.                         | 5¼ min.  |
| 3.                         | 2¼ min. | 3, 4.                      | 10 min. | 3.                         | 5¼ min.  |
| 4.                         | 2¼ min. | 5-8.                       | ? min.  | 4.                         | 7½ min.  |
| 5.                         | 2¾ min. |                            |         | 5.                         | 9 min.   |
| 6.                         | 3½ min. |                            |         | 6, 7.                      | 10½ min. |
|                            |         |                            |         | 8.                         | ? min.   |

This time experiment alone proves that there can be no explanation for an "unknown force" which "draws to the hive like a magnet;" for if it really existed these great differences in time would be entirely inexplicable. Since there was no wind, and the sun was shining, there were no hindrances to flight, and the bees ought to have reached the hive-entrance in the shortest period and at the same time. Further, supposing the existence of an unknown force which draws bees back to the hive directly, the length of time for flight is in itself too long because bees fly very quickly. A carrier pigeon would undoubtedly cover the same distances in question under the same favorable conditions in eighteen, twenty-four, and thirty-nine seconds, if we use as proof the calculations of Ziegler on the swiftness of carrier pigeons.<sup>87</sup> Their flight is found to be often as swift as 1000 meters per minute. If we now take the flight of bees to be half that, 500 meters per minute (a velocity which has been directly observed by Cowan<sup>88</sup>) then the "unknown force" should have led the bees back in thirty-six, forty-eight, and seventy-eight seconds. If we double the time because the bees in the experiment were carrying honey,<sup>89</sup> the time would be normally about one minute twelve seconds, one minute thirty-six seconds, and two minutes thirty-six seconds. Comparing this with Bethe's table we find a striking difference which is unintelligible if we accept the idea of the "unknown force," but this difference is easily explained if we consider that the bees had to orient themselves with their eyes, and that they at first made errors in direction so that they found the hive singly after three and one-half, ten, and ten and one-half minutes had elapsed.

Of nineteen bees which were let fly from a courtyard into the street, Bethe observed that seventeen of them ("at about half the height of the houses," "before they flew as high as the roof") "took the exact direction" for the hives at the Institute. That these bees probably followed only light stimuli in taking this direction I have said before, for that they really did not return directly to the hive is shown by the above table. If all the bees, "almost without exception," which were set free in an "unknown neighborhood" under the conditions cited, took "exactly the right direction" they would have come in very much more quickly.<sup>90</sup> I would here refer further to what I incidentally work out from the box experiment (see p. 25).

The "unknown force" does not lead the bees back to the hive, but, Bethe suggests, to the place where the hive stands or has usually stood. Is not this memory of location? What does Bethe understand by the "unknown force"? We receive no explanation. He thinks it is a power lying outside the bees, "which draws them to this place in space as a magnet draws steel" (Bethe, p. 93). He has made no investigations to find out whether this unknown force is connected at all with any organ of the bee.

But we shall attempt to get nearer to this mysterious power.

<sup>87</sup> H. E. Ziegler, Die Geschwindigkeit der Brieftauben, Zoolog. Jahrb., X. Bd., 1897.

<sup>88</sup> Thos. Wm. Cowan, The Honey-bee, its Natural History, Anatomy, and Physiology. London, 1890; German edition, Braunschweig, 1891.

<sup>89</sup> "One can not take any bees at all for this experiment; but such as come into the hive laden must be chosen, for otherwise we have no guarantee that the bees will come home by the shortest way and not go foraging first." Bethe, l. c., p. 87.

<sup>90</sup> The assertion that bees would fly directly to the hive, but that on the way they alighted at any time, then flew again in the direct line, is in contradiction to the habits of bees. They fly many kilometers without resting.

## DISAPPEARANCE OF THE MEMORY FOR LOCATION THROUGH NARCOTIZATION.

If bees are deafened with chloroform, ether, saltpeter, puff-ball, etc., the memory for location entirely disappears. After waking from the stupor they may be taken from the hive and they will not fly back to the place in space in which they are "accustomed to find it." They no longer recognize their own home nor the place where it stands; they have forgotten everything previously known. But an animal that can forget must have possessed something to remember. The memory pictures are wiped away. We see that the "unknown force" is identical with the memory for location which builds up memory pictures.<sup>71</sup>

It is necessary to mention that bees which have been stupefied become entirely normal again—that is, they orient themselves with regard to their new home, and gather new memory pictures by which they find once more the places for nectar and pollen as well as their new hive.

Bees, therefore, have capacity for learning—a fact which Bethe disputes.

Let us look more closely at the quintessence of Bethe's investigations. Upon pages 81 and 89 he formulates the view about the "unknown force," the counterpart of which is stated in this chapter (see p. 19). On page 94 we find further conclusions in the following words: "Yet I must repeat: Bees follow a force which is entirely unknown to us, and which causes them to return to the place in space from which they flew. This place is usually the hive, but it need not necessarily be. The influence of this force reaches over a circle of only a few kilometers."

But here we have no "repetition" of what has been said, but something that, on closer examination, shows statements which are contradictory among themselves, and which contradict earlier assertions, if one takes into consideration the observations which Bethe uses in formulating this conclusion (Bethe, p. 93). We shall now look somewhat more closely at these observations.

## THE BOX EXPERIMENT.

If the unknown force acts at a distance around the hive of only three or four kilometers, as Bethe asserts, then all the bees of this colony which were set free within this circle must return unresistingly to the place from which they flew which "draws like a magnet." But this is not the case, as Bethe himself proves in the experiment given on page 93. He says: "In my first experiment with letting bees fly from other places I observed the following: I placed the box, in which the bees were transported, on one of the large pieces of sandstone lying around in a stone-cutter's yard and opened the lid. The bees all flew out; and most of them, after a few circles in the air, went in the direction of the Institute. Two bees mounted to a height of about three meters, made a few circles of four or five meters in diameter, and then alighted on the box. I drove them away into the air again. They flew in large circles around it, and then again alighted on the box. Now I took the box away and put it on another stone, having driven the bees into the air once more. Both bees flew so high that I could no longer see them; but a few seconds later they sank again and gradually flew around the place where the box had stood."

We see, then, that a few bees were influenced by the unknown force, but others were not. This changing condition Bethe can not and does not attempt to explain.

That the bees alighted on the stone where the box had been (which fact Bethe tells with astonishment) is very easily understood, and furnishes further proof of the excellent sense of locality in bees, for their admirable orientation with their eyes. Bethe's objection, "if they had been influenced by chemical or light reaction, then they would have flown to the stone only two meters distant, and easily visible, on which the box was placed. But they flew back to the place from which they had flown," signifies anthropomorphism brought in in its highest potentiality. It is not possible to conclude for bees that they would look for a box two meters away, which before had stood in the other place. Their

<sup>71</sup> I might ask our ant-investigators to take up similar experiments with ants. It would be of great interest to know whether a similar condition can be demonstrated.



memory of locality leads them with infallible certainty back to the place they had impressed upon themselves by the circling orientation.

But why did these bees not fly back to the Institute if they possess such an infallible sense of locality? For the simple reason that they were young bees which had not yet developed their orientation by flying out, or perhaps old ones that had not taken their orientation flight till to this spot. No one who is thoroughly familiar with the nature of bees can have the slightest doubt about it.<sup>72</sup>

But because of these experiments and others, Bethe was forced to take this position in formulating his final conclusions: "The unknown force causes the bees to return to the place from which they flew," and, therefore, to modify his earlier declaration that they return "to the place in space where they are accustomed to finding the hive." The box experiment can not explain both the habitual return to a dwelling and a single return to a place. The return to the place from which they flew takes place in those bees which returned to the box and not in those which did not "return to the place from which they flew" but turned toward the Institute. I must confess that I find no logic in these contradictory statements.

Yet hear Bethe further: "I often repeated these experiments later. The further away the bees were taken from the hive, the fewer returned to it, the more flew back to the place from which they had flown."<sup>73</sup> I chose open fields for these experiments where there were no large objects by which the bees might orient themselves optically. The box was taken up immediately after the bees had flown out. I marked the place in the grass accurately and stepped back a few steps. The bees returned with accuracy, and made scarcely a mistake of more than a few decimeters. Many trod exactly upon the spot. Often they stayed in the air for a minute, then returned. Once I noticed a bee alight on some *salvia* in the meadow to take nectar there; then it flew away again and then returned to the place from which it had flown. It was most startling to me when I held the box open in the air until the bees had flown away and then stepped aside a few steps. Four or six bees, after circling in the air, returned to the very spot where I had held the box, making small circles at about the height of a man."

I can only remark here that, even if there were not objects in the meadow optically discernible to human eyes by which they could orient themselves, there may have been innumerable landmarks for bees. No one will doubt this who knows anything about the wonderful certainty (far surpassing human ability) with which bees in swift flight pick out their own homes among hundreds of bee-hives placed close together and of bewildering similarity. And if Bethe could manage without marking accurately the place "in the air" (which I must say to my shame I did not succeed in doing in my control experiments, in spite of eyes which are sharper than ordinary), then the bees might have been able to do it too. In order to give the bees the least possible clue (the height of a man) I did not stand but lay down and noted approximately the large circles of searching bees in the air in the direction of the place from which they had flown. I can, therefore, find no support in the experiment of Bethe for an unintelligible "unknown force." Moreover, a few other control experiments gave such interesting and divergent results that I must enlarge further upon them.

I let a few bees fly from a box placed on the short grass of a wide meadow, approximately five hundred meters from the apiary. I quickly stepped a few paces to one side, greatly changing my position, as I did also in the following experiments. The bees

<sup>72</sup> I might point out in this connection that we see an analogous condition in carrier pigeons. In Prof. H. E. Ziegler's writing already cited, we find the following abstract, Ueber die Orientierung der Brieftauben: "After all I have read and heard of the flight of carrier pigeons, I am of the opinion that their orientation depends upon memory alone, and that it is unnecessary to ascribe it to a mysterious sense of direction." If pigeons are taken away to a place where they no longer have any point of orientation they take up various directions and some make mistakes. The fanciers' society will not undertake to send out pigeons from a distance for which they are unprepared, for in that way there is constantly a greater or less loss of good pigeons. "The pigeon-fancier drills his pigeons in established routes, and thus takes them by degrees to places further away, always in one direction." Also, pigeons can orient themselves in fog and darkness just as little as bees can.

<sup>73</sup> This statement coincides excellently with the foregoing statements against the existence of an unknown force. The logical consequence from this assertion is that the "unknown force" compels bees to fly in two different directions—to the hive and to the box; the one here and the other there. This, to be sure, can not be brought into harmony with what Bethe before considered the influence of the unknown force, nor with the assertion that the "impulse to return to the hive is the strongest of all," etc.

mounted slowly in widening circles, but keeping very low on the whole, at perhaps twice the height of a man. After a minute one bee returned to the box; in one and a half minutes, a second came. Then I drove both these off and took the box away. During the next minute none returned to the place where the box had been, but I saw a number zealously seeking, flying close to the grass in large circles, then flying a little higher. Suddenly, for some unknown reason, numerous bees in a second box under my coat buzzed loudly, and almost immediately the searching bees buzzed around me (I was standing in the direction of the wind) so strikingly that my companions beside me exclaimed, "They have heard the other bees." Although I now replaced the box to its former position it remained disregarded; but whenever we went in the near neighborhood the bees followed us, and some alighted on my shoulders, hat, and coat. When I went further away my companions were surrounded, although they had no bees with them. It is noteworthy that the bees in the second box belonged to another colony.

I shall now describe the second experiment. The other box was held up high; the inmates about thirty or forty in number circled in a small radius for a long time, then gradually made larger circles. Some worked in a more up-and-down fashion, close to the box, continually turning the head toward it, just as in the first orientation flight from the hive, about which I shall speak more in detail further on. About half a minute after I took the box and drew back quickly, trying to impress accurately on my mind the spot at the height where the box had been. Two bees appeared in a few seconds, but in a place a little to one side; and then, after making large circles, disappeared again. The chief thing to be seen was the irregular search which they all carried on together after a few minutes in ever narrowing circles,<sup>74</sup> apparently flying close over the ground about two meters from the place where I had stood. The bees were no longer seeking the box, but their home, the entrance of which (according to my estimate) was just at the height above the ground of the circles which they were making. I can give no other explanation for this singular phenomenon. After the bees again wandered aimlessly for some time, flying around us part of the time as described earlier, they followed us homeward for about twenty paces, then turned back. That proportionately few flew back to the apiary is explained by the fact that the bees shortly before had come from the moor, and in the cool autumn weather could hardly have flown out, so that an orientation from the apiary was not yet possible. The day of the experiment was sunny, with a moderate southwest wind.

The striking occurrence, that my companions and I were so thickly surrounded, can be interpreted in so many ways that to explain it would here lead us too far.

In the foregoing I see many proofs for the existence of memory for locality; but all these box experiments are untrustworthy, since the investigations go on under entirely abnormal conditions for the bees, and the results do not harmonize with those gained from the apiary. It seems very risky to me, therefore, to draw conclusions from them for normal conditions, since we may easily be deceived. The time of year and the weather, as well as the management of the bees, will greatly modify the results of this kind of experiments. If it is recognized how easily bees are influenced by various stimuli (e. g., shaking, cooling, breathing on them, confinement, feeding, strange strong odors, etc.), I say influenced, diverted, "confused," "subdued," "goaded on," or "calmed," then it will be realized how difficult is the interpretation of such experiments and how cautiously one must work on them.

If one ask Bethe why the unknown force acts at a distance of only three or four kilometers, we receive no explanation from him; he does not even attempt to give one. The explanation, however, is very simple. The mysterious force acts within the space in which the bees have previously taken their flights of orientation, and acts only as far as they have flown at any time and gathered memory pictures. The proofs for this are easy to bring forward. They show on the other hand that this unknown force so designated is identical with memory of location.

<sup>74</sup> One sees from this that bees pay attention to each other, since they keep together and exhibit the same behavior. Imitation instinct? Sense of hearing?



1. If young bees able to fly (brood-nurses), which have not yet had their flight of orientation, are let fly not far from the apiary, none find their way back to the hive.<sup>75</sup> It is also significant that first swarms, which are almost entirely made up of old bees, in the loss of the queen quickly re-enter the mother colony, while an after-swarm, for the most part composed of young bees, buzzes about for a long time, finally entering strange colonies.

2. If old bees are let fly at a much greater distance they all find their way back.

3. If a colony is brought from a place more than seven kilometers away, and the old bees are let fly only thirty or forty meters from their hive before they have been able to make their flight of orientation, none find their way back into the hive, supposing that (in such a short distance) houses or trees intervene between it and the place from which they were set free.

4. I had two colonies placed in the garden of the Zoological Institute in Jena for the purpose of further investigation. At the end of the summer semester of 1899 they were taken to the apiary of a bee-keeper about two thousand meters distant. Since the colonies were not stupefied, it was presumed that many of the old flight bees would return to the Institute apiary, and, for the refuge of these homeless ones, I placed a hive with some empty frames exactly where their home had stood. Many hundreds returned, which, in spite of complete freedom of flight, loitered around the empty hive uneasily for two days. They were afterward chloroformed, and preserved in formaline, for purposes of demonstration. Their memory of locality had led them back.

Naturally and easily, the varied conduct of bees in these four cases is explained if we accept the theory of an orientation with the eyes through memory pictures, while the unknown force entangles us in contradictions and inextricable mysteries.<sup>76</sup>

It seems remarkable that Bethe attempts throughout to explain "how bees find their way home," but never how they find their way away from the hive. With regard to their finding their way back to a place outside of the hive, he says only the following (Bethe, l. c., p. 90): "The place where a honey supply has been found is again sought, I think, not because of memory of locality, but because of a reaction of the same force unknown to us, etc." Bethe here refers to the observations of Lubbock (l. c.) and Forel<sup>77</sup> who put down vessels containing honey, and observed that marked bees always returned to them.

Because of these assertions, Bethe's theory is still more complicated, and more difficult to understand. We must not conclude, therefore, that "bees follow a force which causes them to return to the place in space from which they flew, which place is generally, but not necessarily, the hive," for in an acceptance of this opinion the bees would have to swing to and fro like a pendulum forced always between their dwelling and the honey supply, whether there is any honey there or not. If they have flown from the hive or from the place where the honey-receptacle was, the unknown force "impels" them to return to both places.<sup>78</sup>

<sup>75</sup> As is well known, young bees fly for the first time about ten to fourteen days after they emerge. During the first two weeks their existence is that of "house bees," "nurses," who perform all the house-keeping and feed the larvae. This is, I might say, the firmly established management, from which there is no deviation. Yet we can modify this activity substantially. For example, if we form a colony of bees which have just emerged, and give it a fertile queen, brood, and frames of honey, then we would see that part of the young bees become "field bees" in five or six days, thus taking up the outside work considerably earlier, even if everything is present in the hive which is necessary for the existence of the colony.

<sup>76</sup> Bethe refers at different times to Fabre's investigations on *Chalicodoma* (Fabre, *Souvenirs entomologiques*: Paris, 1879; Fabre, *Nouveaux souvenirs entomol.*: Paris, 1882). Yet as early as 1895 Weismann (Weismann, *Wie sehen die Insekten?* Deutsche Rundschau, 1895, pp. 434-452), had overthrown, in a very interesting paper, Fabre's view concerning the sense of direction. Weismann comes to the following conclusions: "The only correct solution of the enigma of path-finding by *Chalicodoma* is that the insects find their way back with their eyes."

<sup>77</sup> Forel, *Recueil zoologique Suisse*, 1 Série, T. 4, 1886-88.

<sup>78</sup> If an objection were here to be made, that very probably bees are compelled by the unknown force to return to the place where honey or some stimulus is placed, just as long as the stimulus is present, and that the action of the unknown force could cease with the disappearance of the stimulus, such an exception might appear unauthorized for the following reasons: We should have two entirely different kinds of unknown forces according to this view, since the one leading the bees back to the hive, in fact, forces them to return to the place where the hive stands or no longer stands. Here the stimulus, therefore, is acting in spite of the fact that the means of stimulation have been removed. Then we should have a second force which vanishes with the disappearance of the means of stimulation. Something very different from Bethe's definition, which is not consistent, and decidedly not at all conclusive, occurs, for the observation may be made frequently that food or meal remains unnoticed, and is not

## HEADS OF GRAIN

### FROM DIFFERENT FIELDS

COMBS BUILT CROSSWISE IN SECTIONS, EVEN WHERE STARTERS WERE USED.

What causes my bees to build crosswise of the sections, and every way, with one inch of foundation in the bottom and three inches in the top, and fastened at the bottom and top only?

Would it do to put in full sheets and fasten at the top only, and let it hang down loose?

Hastings, Pa., June 9.

V. A. H.

[If you put in foundation starters at top and bottom we are at a loss to understand why the bees built the combs crosswise unless the fastening of the starters was so poorly done that they fell down and lay crosswise, with the result that the combs were built from them. Your bottom starters should not be more than half an inch high. This may be where a part of your trouble is.]

You do not say any thing about using separators; but most producers consider it an advantage to use them—not because they prevent the building of combs crosswise, but because they prevent bulging beyond the edge of the sections. Putting in full sheets of foundation, as suggested, might help the matter somewhat.

If any of our readers have experienced similar difficulty, or if any one else knows what is the cause of our correspondent's trouble, we should be glad to have him report.—Ed.]

AN ABSCONDING SWARM FROM A COLONY WITH A CLIPPED QUEEN.

I had a peculiar experience with a swarm of bees to-day. They came off with a clipped queen. I caught and caged the queen, and the bees left without settling. I looked through the parent hive and failed to find any cell from which a young queen had hatched which might have left with them.

E. H. VINCENT.

Feyil, Okla., May 9.

[We have had reports before of a swarm absconding when it had a clipped queen in the hive; but all cases of this kind can be accounted for by a stray virgin which by mistake went into the hive of the clipped queen, or which may have hatched from some obscure cell. We do not ourselves hold the theory that bees will abscond without any thing in the nature of a queen. A swarm from a clipped-queen hive will cluster; and on breaking the cluster, and taking wing, may unite with another swarm having a virgin. If they were disposed to go for parts unknown they would leave, giving their owner the impression that they went off without any thing.—Ed.]

CAPPING-MELTERS USED YEARS AGO.

After reading J. Y. Peterson's article on melting cappings, page 559, May 1, I will say that I had some experience in that line years ago. I think it was in 1886 or '7 when we had a Swiss or Gerster wax-extractor. We filled the water-chamber underneath with water, and the top part with wax or cappings, and the wax and honey all ran out together. It was made to rest on top of

the stove. We simply arranged the thing to stand on a two-burner oil-stove, and rigged up a lard-can as sort of funnel so the cappings dropped right through into the extractor. It worked all right, only sometimes the snout would get clogged with cold wax so that we had to let it all cool together. At such times I thought it spoiled the flavor of the honey. I don't see why one of them could not be made to work all right, and no odds to anybody in regard to royalties. There were plenty of them used years ago. Some of the boys did not like the heat in the extracting-room.

EUGENE MANNING.

Trumansburg, N. Y., May 8.

[There is no reason in the world why the old-fashioned Swiss wax-extractor could not have been used in the manner described; but it would have the objection that hot steam would be enveloping the one doing the uncapping. We are under the impression that the German wax-press has been used in the same way. If any one has so used it, let him report.]

This press, according to directions, is supposed to be used for holding the cappings until the basket is full. Heat is then applied to the bottom without rehandling the cappings, when the honey and the wax run out into the one receptacle. On cooling, the cake of wax may be lifted off the honey.

It would not require a great stretch of inventive genius to melt the cappings as fast as they fall into the basket; but our opinion is, without having tried it, that the work would be very unpleasant, owing to the aforesaid hot steam.—Ed.]

THE DR. MILLER SPLINTS NOT SATISFACTORY.

About two weeks ago I filled up a Danzenbaker hive with full sheets of foundation, putting Miller splints on them. I put this hive under my best swarm of bees, and to-day I looked them over. I found the bees had begun on the south side of the hive and cut out all the splints, leaving the foundation hanging in long strips. They had only begun on the tenth or north-side frame; but their first work was to cut out the splints, starting at the top. I wanted to send you a photograph of one frame so you could see how it looked, but I had no film in my camera. I have had a lot of trouble with the full sheets of foundation in having it hang flat; and when I read Dr. Miller's article on splints it struck me as a good thing, and I had great expectations when I put the frames in the hive-body, as the foundation looked like so many boards. If Dr. M. can tell me wherein the trouble lies I wish he would do so. I am a novice with two colonies; and when I said above I had a lot of trouble, it was in only a comparative sense. I see Mr. Pouder, on page 699, tells how he gets frames filled without wire or splints; but it would take me a long time to get ten frames filled. I am going to try his way as soon as I open a hive.

HERVEY B. JONES.

Summit, N. J.

[If there were no honey coming in at the time you put in the foundation, or if the wood splints were too large, the bees probably would do just what they did do—reject the artificial stays given them. It is our opinion, without having made a comparative test, that the bees would not have



cut the foundation in strips if it had been stayed in the usual manner with wires. Years ago, when we used wire and a folded tin bar (the latter about the size of a wood splint) the bees would sometimes gnaw away the wax around the bar when they would not cut away the foundation around the wires used in the same frame. But this gnawing around the bar occurred only when honey was not coming in, and hence we deduce the cause of your trouble. If Dr. Miller can add any light on the difficulty we shall be pleased to have him do so.—ED.]

#### A GOOD PLAN FOR WATERING BEES.

I have tried a great many different plans, and I believe I have finally found one that overcomes all loss of bees, and at the same time protects them from the wind, as many bees are blown into the water, and so chilled that they are unable to crawl out, and finally perish. Try it for summer or winter. It's all right for cold spring or winter.

Dig a hole in the ground any size you may think you will need. The one I use is about 2×3 feet and about 10 inches deep, and the shape of an old-fashioned wooden butter-bowl. Make the side at or near the top very sloping; pound the bottom and sides as solid as you can; cement this all over the bottom and sides so it will be water-tight, then fill to a little above the level of the ground with brickbats, after which put in the water. At any time you wish to clean the basin out, just take a bucket of water and souse it into the basin, and all dirt or leaves will float out as the water overflows. I have one end of the basin about an inch lower than the other; the bees go down in among the bats, and are entirely protected, and suck the water from the porous brick without the loss of a single bee.

C. B. PALMER.

Bradshaw, Neb., June 8.

#### HONEY-DEW ON BOX-ELDER AND PEACH LEAVES.

I should like to ask you a question regarding the honey-dew. My bees have been working on the box-elder and peach leaves. They seem to work almost any place on the box-elder leaves. There are little sparkling drops on the leaves, but on the peach leaves they seem to work in the cups of the leaf right next to the stem. They work on them from sunrise till ten o'clock, then from four till dark. I don't know whether it is a honey-dew or not.

C. W. BARR.

Florence, Kan., April 22.

[This appears to be a pure plant exudation, and not a secretion from insects. Most honey-dews, so called, are of the latter kind. But there are a few which are the product of the leaves or leaf-stems—sometimes saccharine and sometimes of a gummy nature.—ED.]

#### COMPELLED TO ABANDON SECTION-HOLDERS FOR T SUPERS ON ACCOUNT OF BEE-GLUE.

I suppose you think it strange for an old bee-keeper to change from section-holders to T tins; but here the bees glue every thing so tight that I have had a great deal of trouble to remove the sections from section-holders and separators; and as I

have only 35 colonies at present, and sell all my honey at my door (yes, and more), I have concluded to run this season without section-holders and separators, so you see the need of  $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{8}$  sections to use in the  $4\frac{1}{4}$  super with T tins; and by trial I find the T tins to be by far the best; for here, as the glue is so very tenacious and so plentiful, our honey is, as a general thing, not fine, but sells readily at 12½ cts., either chunk section or extracted.

S. D. RUTHERFORD.

Hot Springs, Va., May 6.

#### IS THE GRADING OF QUEENS INCONSISTENT?

Why can a queen-breeder have such a variety of queens, rated with a graduating price list? Is not the whole matter of grading queens very inconsistent?

RALPH P. FISHER.

Great Meadows, N. J.

[We see no reason why there should not be a variety of different grades of queens. Starting with the untested we have the select and the ordinary run of them. This is multiplied by the different races. In addition to the tested we have "extra select," "select," and "plain tested," the latter grade comprising the common run. A queen may be actually select tested, but not yet a breeder; that is, she may not be able to reproduce herself in queens, either in color or characteristics. This involves a couple more grades—ordinary breeder, select breeder, and extra-select breeder. A large honey-producer could well afford to pay for a select breeder. The queen-breeder will, of course, want the very best that money will buy. The small producer might be content with an ordinary breeder; then another class does not care for a breeding queen, but wants something extra select for color, gentleness, and honey-gathering qualities. She may be a good breeder, but it would probably take a year before that fact could be fully shown. If, therefore, he would want his queen-breeder to furnish him a tested breeder, that breeder would have to have extra money, of course.—ED.]

#### SWEET CLOVER—WHAT THE ILLINOIS EXPERIMENT STATION SAYS OF IT, ETC.

I send herewith circular No. 116, Illinois Experiment Station, which refers to sweet clover as one of the most useful legumes for green manuring.

I have six acres of sweet clover which was sown in 1907 with oats. It stands knee high now, and the growth would be about all a plow would want to turn under. On a portion of the piece I cut a ton per acre off from it last fall, and put it up for hay.

HENRY STEWART.

Prophetstown, Ill.

#### WATER PAINT NOT WEATHER-PROOF.

In the April 1st issue of GLEANINGS, p. 425, F. Greiner asks for experience as to painting hives with water paint. Some seven or eight years ago I painted perhaps 100 or more hives and supers with it. Results were altogether bad. In a few months it began to chalk and powder off, and soil my hands and clothes every time I handled them. The paint may do for inside work, but it doesn't stand the weather.

Utica, Ill., April 20.

A. MOTTAZ.

#### SPRING FEEDING PREFERRED FOR WEAK COLONIES.

When summed up, the evidence on this matter of spring vs. fall feeding appears to show conclusively that "too much spring feeding is no good, but too much fall feeding is just right." Now, although I have no desire to set up my twelve years of experience in keeping bees for the production of section honey against the teachings of any "old-timer," I really think I will just keep on feeding in the spring until there is a better way brought out for quickly building up the backward colonies.

In this locality a colony that has come through the winter without the loss of many bees will, if it has a good queen and plenty of stores, build up; and, if allowed, it will cast a swarm before the flow. Such colonies are unmolested. From 15 to 20 per cent, however, will be found to have just as good a queen, and a hive filled with stores, and yet the bees will be weak, and will not build up if left to themselves. These can be built up by stimulative feeding. It is cheaper, and involves less labor, than spreading or equalizing brood, and is not done at the expense of the good colonies. While fall feeding will reduce the other to a minimum, honey in the hive will not cause bees to breed to their full capacity, and it can not fully take the place of spring feeding.

Fort Smith, Ark.

LEO E. GATELEY.

#### DIVISION-BOARDS FOR DUMMIES.

In regard to wooden dummies mentioned in Straws, April 15, I should like to ask through GLEANINGS if any of its readers have ever tried using the division-boards. They would provide room for bees to cluster between them, and would overcome the objection to using dummies under the sections.

Brooksville, Ky.

CHAS. E. CONRAD.

[We do not know that we quite understand your question. The putting-in of several division-boards a bee-space apart to leave clustering room, *a la* Aspinwall, might accomplish a little, but we doubt it. If they were slatted like a fence separator they might do some good. See Mr. Aspinwall's article in last issue, p. 758.—ED.]

#### WHEN THE BEES SHAKE THEIR ABDOMENS ARE THEY TRYING TO LOOSEN THE WAX SCALES?

On page 491 E. A. Newell, of Massillon, Ohio, asks the following question:

"What is a worker doing when it shakes its abdomen over the combs with a gyrating movement, doing this on brood-combs over eggs, larvae, and sealed brood?"

I became interested some time ago when, while watching this performance, I saw one of the bees pick up a small wax scale, or thin leaf of wax, after the bee with the swinging motion had moved away. It struck me at once that this bee had the idea of the principle of the honey-extractor.

By holding it dead still, and moving its abdomen to and fro very rapidly, or, rather, from side to side, this motion would tend to throw out the small wax scales by centrifugal force.

As the wax-pockets are on the under side of the abdomen, and open toward the "rear end," as the

Jay calls it, it would take this gyrating movement to extract the wax scales. It is not every colony that has these "gyrating bees," or at least I have not noticed it in some colonies. Perhaps they have not yet "caught on."

Stratton, Colo.

PETER BOHM.

[It hardly seems probable that bees shake their abdomens to loosen the wax scales. They may fall off, it is true, during the act. There are too many indications that go to show that this shaking is simply the means of showing that new honey or new pollen has been discovered for us to entertain the shake-off-scale theory. If any subscriber has any thing to offer on the subject we should be glad to hear from him.—ED.]

#### SPRING FEEDING INDUCING ROBBERING; THE USE OF ENTRANCE-GUARDS TO STOP IT.

My experience last spring and also this was that feeding either strong or weak colonies in the spring causes great danger of robbing. I lost three colonies last spring and two this year by robbers. I have been handling bees more or less the past twenty years, and I have always been successful when I used the Miller feeder in September or October.

I have lately been using entrance-guards to stop robbing, with the best of success.

Asherville, Kan.

B. F. HARFORD.

#### HOW MUCH SULPHUR TO USE IN FUMIGATING COMB HONEY TO PROTECT IT FROM WAX-WORMS.

Will you kindly inform me what amount of sulphur per super of sections is burned when fumigating sections containing honey? How long are the supers to be fumigated? how often in, say, three months?

J. M. ROBERTSON.

Bombo, Zululand.

[The amount of sulphur per super of sections has never been given in any printed work. It is the usual custom to put about two or three pounds in a big iron kettle placed upon a couple of bricks in a room somewhere about 8x10, in which the comb honey or combs are stored. This sulphur is ignited, when the room is closed and locked. The supers should be piled up in such a way that the fumes can gain access to every section or comb.

It is the general practice nowadays to use bisulphide of carbon in place of the sulphur. Ten or twenty supers are piled one on top of the other. Surmounting the whole pile, and in an empty super, is placed a saucer containing half a pint of bisulphide of carbon. This super is then closed, when the evaporation of the chemical will cause the destruction of any bee-moth or worms that may be in the combs. The fumes from the bisulphide, being heavier than air, settle down all through. If one has several thousand pounds of honey to fumigate in a room it may be cheaper to use the sulphur.

It will not be necessary to refumigate if the supers are kept closed thereafter so that the moth-miller can not get at them again.

If any of our readers will give us particulars as to the amount to use we shall be glad to have them do so.—ED.]



# DOES CUTTING OUT CELLS TO RESTRAIN SWARMING MAKE THE BEES CROSS?

Eight days after one of my good colonies sent out its first swarm I removed all queen-cells but one. It has apparently had the desired result of preventing another swarm; but one result was any thing but desired, and that was that the bees immediately became so vicious and ugly that for two or three days it was not perfectly safe for any one to come within several rods of the hive, to say nothing of approaching within customary observing distance. They gradually became more peaceable. Is that the usual result of the operation?

One old bee-keeper tells me that, if the young queens had been killed by piercing the cells with a needle, instead of removing, the bees would have retained their good temper. Do you think that would be true? If so, why not always do this?

CHESTER G. DALZELL.

South Egremont, Mass.

[The case here cited is quite unusual. It is our opinion that the cutting-out of cells had nothing to do with the subsequent vicious temperament of the bees. It is conceivable that scattering the royal food and mutilating the brood during the robbing season might make the bees temporarily cross, but that the cutting-out of cells during the swarming should do so, hardly seems tenable. The mere poking of a hole through a cell with a needle amounts to just the same thing as tearing the cell down; for if the cell be perforated in the side the bees will finish up the work of destruction.—Ed.]

## A PLEA FOR NON-SEPARATOR COMB HONEY.

On page 546, May 1, you seem to be sure that the use of separators is to be commended for comb-honey production. Now, when I go into a store to sell honey I always call attention to the fact that my honey is nearly, if not quite, full weight. When I use separators or fences I always feel as though I did not care to put my name on the cases because they are so light. I have shipped tons of honey that would run from 23 to 25 pounds to the case, and it always gives satisfaction to dealers and to consumers.

Side by side in my yard I have nine-frame telescopic hives and different makes of eight-frame hives, the latter being provided with separators. I always feel sure of getting more sections in the nine-frame hives, where the separators are not used, and the sections are also nearer full weight. I think that, without the separators, the bees have a better chance to work, although the greater yield of honey on the nine-frame hives might possibly be accounted for by reason of the extra frame or because of the telescopic cover which I use on those hives. I have taken first premiums at State, interstate, and county fairs, competing with the product of thousands of colonies where separators were used. CHARLES W. SAGER.

Matbon, Washington.

[If you will refer to what we have said on this subject you will see that we have never claimed that *no* bee-keeper can produce good marketable comb honey without separators; for it can not be denied that there is occasionally here and there one who can produce fine comb honey without separators; but he is the exception that proves the

rule. But the average man in the average locality should be discouraged in the most emphatic manner from making any attempt at it.

The great bulk of the non-separated comb honey that has been shipped out has done more to hurt the markets, if we except dishonest grading, than any other one thing. Those of us who visit the large centers and look over the lots of comb honey that come in find that the average lot of sections produced without separators is a bad mess. It should never have left the locality in which it was produced. About all that can be done with it is to cut it out of the sections, pour a little extracted honey over it, and sell it for chunk honey at a low price.

The fact that the Colorado Honey-producers' Association are now discriminating in their grading-rules against an article produced without separators, and the further fact that the great majority of bee-keepers do not attempt to work by that plan, should be sufficient warning to others not to try it.

That more honey may be produced without separators may be so; but the average bee-keeper can not afford to spoil the markets, even if it is true.—Ed.]

## WHY THE BEES DON'T GO INTO THE SUPERS.

I have two hives of bees that completely refuse to go up into the supers to work. They have an abundance of stores below, and plenty of brood, the brood covering three-fourths of the frames. I have tried to coax them up by taking two frames of honey half drawn out, bees and all, and putting them in, but it didn't do any good, so I resort to you for instruction. I. B. MITCHEM.

Newburg, Ind.

[There are two reasons to assign why bees may not go up into the supers: too light a force of bees, or too light a flow of honey, or both. The remedy is to have strong colonies for comb-honey production. Of course, if the honey-flow be not strong they will not enter the supers and store honey, unless the light flow continues for a considerable length of time; but in the meantime they may swarm, for a light flow is more conducive to swarming than a heavy one. It is advisable to look through the hive, cutting out any swarming cells that may be found on the combs; give a large entrance, not less than  $\frac{1}{2}$  deep by the width of the hive, and see that shade is provided during the hottest portion of the day, say from ten o'clock on to three in the afternoon. If there be no shade it would be advisable to put a shade-board projecting front and rear and over on the south side, so as to shade the hive during the hot part of the day.—Ed.]

## SUCCESSFUL WINTERING OF TWO DANZENBAKER HIVES PACKED IN PAPER.

Last fall I had two swarms in Danzenbaker hives, and no suitable cellar in which to put them. I bought the thin super covers and deep telescope covers. On top of the super cover I laid newspapers, letting them hang down all around until there were about 100 layers on all sides and ends. The telescope covers were then slid on and left for the winter. Entrance was smallest on the Danzenbaker bottom-board, and sheltered by a piece of board set in front under

outside cover so the sun's rays could not strike the entrance. The bees wintered finely; and when I removed the covering early in May the brood and pollen were plentiful. I did not use a super.

HERVEY B. JONES.

Summit, N. J.

#### DOES NOISE OF ANY KIND HAVE ANY EFFECT IN BRINGING DOWN SWARMS?

This morning the second swarm of the season came out. It went very high, and I was afraid it would alight on a tall tree. My son blew his cornet, and they came down and alighted in three different bunches. In a few minutes one bunch divided and joined the two other clusters. They all came from the same hive. Do you think there could have been two queens? We had a hard time in getting them down, as they were in a brushy place: HATTIE E. GRAVES.

Walpole, N. H., June 9, 1908.

[The blowing of a horn or trumpet would not, in our judgment, have any effect upon the swarm while in the air. It has been said that the noise drowns the note of the queen, but we doubt it. The swarm in this case clustered because it would have done so any way. In all probability there was one or more queens, and this was the cause of the separate clusters, otherwise they all would have clustered in one spot or gone back to the parent hive.

It sometimes happens that, when two or more swarms come out, there will be a division of the bees and a general mix-up. From what you write, we take it that there was only one swarm which divided as explained.—ED.]

#### CATCHING A SWARM WITH THE QUEEN ON A POLE.

A friend of mine had clipped his queen's wings, and when the colony swarmed he found the queen. He picked her up and put her on a forked stick. He next went into the big field where they were all scattered, and held her up; and every bee came and lit on the pole.

Sandy Spring, Md.

JACK BENTLEY.

[It would be perfectly feasible to have a swarm in the manner related in your letter. This has been done; but the usual rule is to put the queen in a cage, fasten the cage to a pole, and then place the pole where the bees are flying the thickest.—ED.]

#### DO COLONIES WITH MANY DRONES PRODUCE THE MOST HONEY?

I have noticed that the hives that raised no drones to speak of store but little honey, and that the hives that raise considerable numbers of drones store the most honey. Of course if the drones are too numerous, they consume considerable honey; but even if there are a large number, the hive stores more than hives having but few drones. I am speaking of colonies that are about equal in strength of worker bees.

I have thought sometimes that the presence of a considerable number of drones in a hive encourages the bees to work harder, or that the drones help in some way—perhaps by keeping up the warmth of the hive, if in no other way. If a drone is held in the hand he feels quite

warm, and no doubt throws off a good deal of heat in the hive.

E. E. WAITE.

Mystic, Conn.

[That the drones throw off bodily heat which is useful in keeping up the temperature of the supers is generally believed; but that the best honey-gatherers are those that have the most drones may be true of blacks, hybrids, and Caucasians, but we think is not necessarily true of Italians.—ED.]

#### HOW ARE SECTIONS CLEANED RAPIDLY?

In GLEANINGS for Dec. 15, 1907, page 1597, is an article by F. J. Farr, of Longmont Colo., on cleaning sections. He says he knew a Mrs. Marian Fuller, of Beloit, Wis., who cleaned and packed 125 cases of 24 sections each, between 7 and 5 o'clock, which is 9½ hours, taking half an hour for dinner. This would be cleaning and packing 3000 sections in 570 minutes, or nearly 5½ sections a minute. We have no slower or more tedious work than cleaning honey. I can at best clean only about 15 cases in a day. The fastest cleaner I have heard of in this part of the country claimed to have cleaned 20 cases in a day. If Mr. Farr will tell us how we can do the work more rapidly he will confer a great favor upon comb-honey producers.

MISS WILLIE WHITE.

Fallbrook, Cal., Dec. 28, 1907.

[Perhaps the style of super or section would have something to do with the extraordinary speed, or possibly the propolis was not as abundant in the one case as in the other. At any rate, we should be glad to hear from any of our readers on the subject.—ED.]

#### THE CHITTIM-TREE; A WESTERN HONEY-YIELDER.

While the bee-keepers of the East are casting about for a tree that is valuable otherwise than for honey, I should like to call their attention to the chittim (*Casara sagrada*) that grows plentifully here in the coast country, and is considered a good honey-producer. All know the value of casara bark, and the wood makes a fence-post equal to black locust. The tree is of small growth. Eight to ten inches in diameter is considered a large tree. It remains in bloom a month, and is visited by the bees from the first out in the morning to the last ones at night. It has been in bloom for two weeks, and the bees are filling the sections with chittim honey.

Halsey, Oregon, May 24.

J. WADDELL.

#### BEEES THAT CAP HONEY WATERY NOT ALWAYS BEST.

In answer to your footnote, page 431, April 1, I will say I have often had Italians cap the sections watery; but they were medium to the poorest honey-gatherers—never among the best. Corinth, Me. S. W. CRESSY.

#### YELLOW SWEET CLOVER; A GOOD YIELD FROM IT.

Bees are doing very nicely, and are well along with the second super. There seems to be nothing doing in white clover, but a fine yield from yellow sweet clover now blooming.

Brooksville, Ky., June 12. E. E. CORLISS.



## OUR HOMES

By A. I. Root

Whatsoever a man soweth, that shall he also reap.—GAL. 6:7.

Some years ago there were several bright articles in GLEANINGS, or some other of the bee journals, signed "B. Lunderer;" and I have been wondering whether B. Lunderer were still alive. May be Dr. Miller can tell us something about it. Well, if he is alive I want to ask his permission to sign myself just now B. Lunderer, or, to be more exact, I guess it had better be Seedcorn B. Lunderer; or may be we had better cut it short and say Blunderer, for that is just what I am. I have been feeling guilty for some days past to think that, with all my exhortations and teachings, I have been making such blundering work of planting our cornfields. We shall have to go a little back in order to get in the whole *lesson* that comes from my blundering.

Two years ago, after listening to Prof. Holden, and reading up in regard to seed corn, I selected at husking-time about 200 ears of corn, strung them on a wire, and hung them up in our cellar basement near the steam-pipes. Then I told you about how I took six kernels from each ear and planted them in the greenhouse. The ears were all so uniformly good that there were really none to throw out. Well, I have told you about our splendid corn crop of last season, that even Prof. Holden, when he went through it, admired. There was only one trouble with it. In consequence of the prolonged wet weather in the spring of 1907 we could not get our corn in until far along in June, and as a consequence a great deal of it was not perfectly matured before frost. Well, Prof. Williams, of our Ohio Experiment Station, gave us a talk last fall, just before corn-husking time, and admonished us to secure our ears for seed corn from some hill that had *four good stalks*. His argument was that we want to select our seed from a plant that had such strong fertility and vigor that it made a good ear in spite of the competition of the three other stalks. For instance, if you go to the corn-crib and select your nicest and best-matured ears you will be more than likely to get ears that come from a hill where there was only one stalk. Any sort of corn-plant would make a large nice ear where it had the whole hill by itself; but we want to get our "pedigree strain" from plants that have enough vitality to stand crowding—not from one that has made a good ear (or a couple of ears) because it has a better environment. This matter has been much talked about, and I suppose you all know more or less about it, and I hope your practice is according to your knowledge. Let me digress a little right here.

Poultry-men are anxiously inquiring why so many chickens die in the shell, and also why so many eggs will not hatch at all. The answer seems to come from a great number of experts, that we want stronger fertility. The eggs must be, as many as possible, fertile, of course; but we want the very strongest fertility. We want to be sure that both parents are in the best of health, and lack nothing in the way of the best kind of food, exercise, air, quarters, and every thing else. When you get a strong vigorous vitality and fer-

tility, then your plant, or chicken, will make its way in spite of bad weather or uncongenial surroundings. This thing applies not only to corn but to the seed of every thing a farmer raises. One of our experiment stations sorted out the largest beans and planted them by themselves; then they put side by side the smallest beans, and they tried this with many kinds of garden seeds. The large well-developed seed that gives the little plant a good send-off might produce double the crop of the small one. Inherited vigor and vitality run all through the animal and vegetable kingdom—"Whatsoever a man soweth, that shall he also reap."

Well, now, friends, I am first rate "on a talk," am I not? I have given you some grand articles and some grand exhortations about saving your seed corn; but after all I fear I have been like a guidepost on a country road, which continually *points the way*, but never goes *anywhere* itself.

Let me tell you what I did after listening to Prof. William's grand lecture on selecting seed corn. He said you had better make selections of ears you want to use, before the corn is fully matured; and he thought it rather better to let the ear remain on the stalk until husking-time. You are aware, perhaps, that, when corn is a little late in maturing, the juices and nutriment in the stalk go into the ear after the corn is cut, especially if it should be cut early to avoid frost. For this reason he said he would tie a colored string or tape to the stalk selected, or clip off the tassel from all stalks where they would be saved for seed.

Well, we not only had trouble (a year ago) in planting our corn on account of wet weather, but the blackbirds and cut-worms destroyed so much of it that we planted a second time and some of it even a third time. On this account it was a little difficult to select the best ears in a field of half a dozen acres. Before I went to Florida I had a good man go through and clip the tassels from enough stalks to give us plenty of seed. Then I directed that, when these ears were husked, they should be placed in our slatted potato-boxes and be hung up by four wires near the steam-pipes in the basement. And this was done; but instead of having half a dozen crates of seed corn, when I returned home in April I found there were only *two* crates, and these not quite full. The explanation given was that some hands were taken out of the factory to help do the husking when the weather happened to be just right. Well, these new comers, I am told, absolutely *refused* to watch for the stalks with the tassel clipped off. They said the best way and the proper way to select corn was to pick it out of the crib, regular old-farmer style. With all *my* blunders, perhaps it does not become me to complain of the stupidity or stubbornness of the average farm help; but it really vexes me, when I take the trouble to explain why I want seed corn saved up by itself, to hear men of average sense and intelligence say they "do not have time" for any such fussing. Prof. Holden tells us about addressing a great audience somewhere in Southern Ohio. After he had spent an hour or more in making all of these things perfectly plain, a big pompous man came up and said in substance, "Prof. Holden, I have been very much interested in your talk; in fact, I have greatly enjoyed it. But I

grow corn by the *hundred acres*; and you know, of course, where I do business on a large scale like that I can not stop to fuss with the things you have been talking about."

Our bright and genial friend Holden said that *that* speech actually made him mad. "Can't stop to fuss! indeed!" Well, now, listen to what I am going to tell you. When I got back from Florida I was all taken up with chickens and the chicken business. I seemed to have lost interest and enthusiasm for the corn business. I advised and directed a little about getting the ground ready, and somehow got it into my head that those two boxes of corn would plant our fields; and as the seed corn kept all winter by the steam-pipes grew so finely the year before, I did not even take the trouble to test the ears. All at once the weather turned favorable, and the men were ready to plant the corn; but when it was half planted I woke up enough to see that our supply would plant only half the field. Then I told the men they would have to select enough to finish it, out of the corn-crib in the way farmers usually do. But one or two of them said that, in consideration of the whole crop being late, and much of it not fully matured, they would hate to risk that in the corn-crib without testing. Now, I could just as well have selected good ears from the crib, and tested them in the greenhouse, as to spend my time in fussing with things of comparatively little importance. But the time to plant was upon us, and it was not done.

A few days before, when buying some baby-chick food of our local seedsmen I saw on the counter a box of corn-plants, all thrifty, and apparently every seed making a good strong plant. I decided, rather than to risk the corn taken from the crib, I would *buy* some corn to finish the field. I did not take the time or trouble to ask if he still had some seed like that which produced the box of plants on the counter. I simply asked for a bushel of his "best seed corn." I paid him \$2.00 for it. When I gave the men that bag of seed corn my conscience began to trouble me a little. I hastily took ten kernels out of the bag, and then got ten more, such as we had planted of our own, and put them in the greenhouse. In about 40 hours every grain cured by the steam-pipes started to grow, but not one grain from that out of the bag. At the end of 60 hours there was a good strong shoot from every kernel of our own growing; but only half a dozen had started at all, from the corn out of the bag. The other four rotted. The corn out in the field did just the same way. It was all late in starting, and only about half of it grew at all. I reported at the seedstore in order that they might know about it, and stop selling that seed to anybody else. Their explanation was this:

Their own tested corn was sold. This they bought of a good reliable farmer. He assured them that he and his neighbors had both planted it, and that it was already up nicely when he offered the seed for sale. Now, there are two and possibly three explanations to this. First, the "reliable farmer" may have put six or eight grains in a hill, so that if only half of the corn grew he would still have a fair stand. I wonder how many farmers work in this way. We adjusted our planters so as to have from three to five grains in a hill.

Another explanation may be that the corn that grew all right or very well at early planting time would only half grow at late planting time. I am told this often happens with corn cured in the ordinary way in the crib.

Now, you would probably suppose that, when I found only about half of the planting would grow, I would have immediately selected ears from the corn-crib, tested them in the greenhouse, and had them ready to plant from tested ears only, when we came to plant over again. Well, I did not do it. I think I must have gotten a fit of being lazy or shiftless, for I was not particularly busy. When I came to look at the stand of corn I told the men to go right at it and plant some more, not only at every missing hill but where there was only one stalk; and I went and picked out some of the best ears in the corn-crib for planting over. One of my men, however, who had had much more experience with seed corn than I have, threw out about half of my selection; and in order to test my ability to pick out good ears of corn that would grow, I selected two ears that I considered as good as any in the crib. Then I took ten grains from each which I put in the greenhouse in rows, the two rows being only an inch apart. Now listen to what I am going to tell you. Every kernel grew from *one* of those two ears, and every kernel *rotted* from the other one. Perhaps I am a poor hand at selecting seed corn; but I am of the opinion there are other bunglers besides myself. After my experiment I took the ears and carried them to Mr. Weibly, and said, "Mr. W., every grain of corn grows from one of these ears, while every one rotted from the other one. Now, can you tell which ear is the good one and which the bad?"

He told immediately, and explained it by saying one ear showed slight traces of mold. Before this, I showed both ears to Mrs. Root. Her father used to be great on corn and saving seed corn. She called the bad ear the better one of the two. Now, you may think this is a trifling matter; but suppose a farmer in picking out ears from his corn-crib, to plant, makes such work of it as I did. Suppose he gets hold of just *one* ear that does not contain a grain that will germinate. What is the consequence? Why, a great part of his crop will be knocked out unless he replants as we have been doing, and replanting is poor business as a rule. If he does not replant, there will be a lot of hills with only one stalk and possibly two, and sometimes a big lot without any in at all; yet he goes through all the motions in getting a crop, cultivates his ground both ways with a patent cultivator, and does splendid work, using a team that costs just now perhaps four or five hundred dollars; and yet I had not enough energy or enthusiasm to give the men plenty of *good seed* that I *knew* would grow, without any guesswork about it.

May be some of you wonder what this seed-corn business has to do with the Home papers. Well, friends, it is not only the corn crop and the crop of chickens and horses and cattle, but it is the crop of *boys and girls* that may be injured or led to go astray by just such slipshod methods and such procrastination as I have been telling you about. I have a nice little greenhouse, warmed by exhaust steam—the best place to test seed corn in the world, and yet at three different



times I delayed and neglected to take the precautions that I knew *ought* to be taken. The most of you have boys and girls growing up in your homes (or if you have not, you *ought* to have); and it is just as important that you be up and dressed, and ready to take the lead, as it is important for you to have your seed corn ready. Sometimes the younger ones around here say something like this:

"Why, father, there is no need for *you* to fuss and worry about the corn crop. We have experienced men who know how to do it all right; and you do not need to pay any attention to it unless you feel like it," etc.

Well, now, this is bad advice. My very health depends on my being busy about something; and it is my business to be busy about something that ought to be attended to, rather than something that I "feel like" doing. As fathers and mothers (at least most of you are), why are your boys and girls not going to church and Sunday-school? Talking to these young people about it is all right; but to make a success of raising children (as well as corn) you must be right in the business yourself. Go to church yourself and set an example; and go to Sunday-school also to set the example before the children and grandchildren. Nothing else will do the business. I explained to the men the importance of saving the seed as I have told you. But I ought to have been out in the field myself to *see* that all the help that was sent out to assist in husking the corn obeyed orders to the letter, no matter whether they thought I had peculiar notions or not;\* and just the same way with your boys and girls. There are plenty in almost every neighborhood who are just beginning to inquire into things. Satan works every day in the week, nights and Sundays; and if you do not sow good seed he will get in *his* sort of seed. Remember what I have been telling you—"Whatsoever a man soweth, that shall he also reap."

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#### "CABINS IN THE WOODS" NOS. 1, 2, 3.

I suppose most of our readers remember about the cabin in the woods up in Northern Michigan—the house that was built in one day with lumber that was brought in one load by one team of horses. Most of you have probably also read about the cabin in the woods No. 2, down on our "Robinson Crusoe island" in South Florida; and I now take pleasure in giving you a picture of the same—see page 818.

The picture does not give as much of a glimpse as I could wish of the tropical plants—palms, palmettos, different kinds of cacti, and of the rubber tree, that grows naturally just at the right of the building. You get a very good view of the gnarled and twisted live oaks. The one on the left is a curiosity, and many people come to see it. Two pretty good-sized oak-trees are united by a large limb or tree-trunk that reaches across from one to the other; in fact, it makes a very nice seat where a dozen can sit down in the shade.

\*As the matter has turned out, it would have been money in my pocket to pay \$10.00 a bushel for the ears that those huskers refused to save out from the stalks having the tops clipped off. The damage to my crop will probably be a great deal more than that in spite of all that can be done now to make up for the mishap.

Various speculations have been made as to how it came about. I think most likely that the tree tipped over when it was young. One of the branches came down to the ground and took root. Then shoots shot up, one from this branch and one from the root of the tree. When these shoots each became large trees, a horizontal trunk nearly a foot in diameter was left bridging over the space from one tree to the other.

In the foreground you can get a glimpse of friend Shumard's queen-rearing hives. Off at a distance, back of the house, is the Gulf of Mexico, that makes itself heard if not seen almost every hour of the day. I found the booming of the breakers was a fine thing to lull me to sleep when tired.

The washtub on top of the barrel was put there to get it out of the way of the chickens. When neighbor Shumard and I were both in "the chicken business" every thing had to be elevated or fenced in to be safe from their depredations. Perhaps I should explain that cabin No. 2 cost about \$200. It took rather *more* than a wagon-load of lumber; but every thing, including the doors and windows, was brought in one load by a sail boat called the Phantom. Perhaps you may wonder how I manage to build so many cabins. Well, this one was built with the understanding that, when I got through with it, friend Shumard was to take it off my hands at half the original cost.

On page 818 you will find a picture of our last cabin in the woods. Mrs. Root, however, objects to calling it a "cabin." She says she thinks it deserves the name of "cottage in the woods." The people standing out in the front porch are your humble servant, Mrs. Root, and Mrs. Brewer, the good wife of the friend (M. L. Brewer, Philo, Ill.) who kindly furnished me the pictures. In Florida the houses are all up on brick piers or piers of some kind. It seems to be necessary for health, and to preserve the timber, to get it a certain distance above the ground that is so damp a good part of the year. Usually the air is allowed to circulate freely under the building. Mrs. Root objected to the untidiness of such an arrangement, so we had latticework put up. You will notice one part of it has tumbled down. You will notice also the long-leaf pine-trees in the background and at either side. These had to be cut away to make room for the house.

Mrs. Root is great on lawns—green lawns. She says she can not admire flowers or shrubbery without green for a background; or perhaps, rather, for a foreground. Well, we got our lawn well started by taking up clumps of Bermuda grass out of neighbor Rood's field. It is tremendous stuff to grow where you do not want it. Our boy Charley graded and leveled the dooryard and marked it off in furrows about two feet apart. The grass was then torn to pieces, thrown into the furrows, and covered up. But even though we had almost no rain for five or six weeks in February and March, nearly every spear of grass started. The chickens admired the grass as much as we did, or more, and we had a long fight to make them let it alone and stay in their own place down in the back yard. We planted quite a lot of shrubbery purchased of the Reasoner Brothers, of Oneco.

At the right you will notice a very pretty

golden-leaved arbor-vitæ, and surrounding it is a circle of hibiscus. The latter grows with wonderful luxuriance all over Florida. Mr. Rood had one little bush, set out, I think, in September, and it commenced putting out blossoms in November and kept it up all winter long, and it gave him from one to three great beautiful blossoms, opening continually.\* The house well painted and finished outside, with plastered walls inside, etc., cost about \$1000, including eave-spouting. A cement cistern on top of the ground reaches up to the eaves of the porch. This cistern is under the roof of the porch at the back side of the house.

Now just a word in closing about the expense of building in Florida. The cottage on the island was built by brother Shumard and his son-in-law. I paid them \$2.00 a day. This last one was built by men who worked only eight hours a day and got \$3.00. Now, in plain regular work they accomplish a great deal, and *perhaps* earn their money; but where we pay such prices as these you can not afford to keep your carpenter at little tinkering jobs. As most kinds of furniture are rather expensive in Florida, you will decide, perhaps, after getting the prices, that you can make stands, tables, etc., cheaper than to buy them ready made. Well, this is all very true if you do the work yourself; but when you set a carpenter at work on something he is not used to, at almost 40 cents an hour, you may find your home-made table and stand will cost you more money than you would have to pay for something a great deal nicer at some furniture store.

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THE WRIGHT BROTHERS AND THEIR FLYING-MACHINE; ALSO SOMETHING IN REGARD TO OTHER FLYING-MACHINES.

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If you want the full particulars of all that has been done by the Wright Brothers and others in America, as well as every thing that has transpired up to date in the whole wide world, you should subscribe for *Aeronautics*, published at 1777 Broadway, New York. The price is \$3.00 a year; but if you do not wish to subscribe for a whole year you should at least get the anniversary number for June, 1908. It is quite a good-sized magazine, and perhaps the most up-to-date document that has appeared on the subject of aeronautics.

The most valuable point to me in this number is the first article, which is a communication from the Wright Brothers themselves. After giving a schedule of every flight during May, 1908, they add as follows:

Our recent experiments were conducted upon the grounds near Kitty Hawk, N. C., where we experimented in 1900, 1901, 1902, and 1903. The flyer used in these experiments was the one used in making the flights in September and October, 1905, near Dayton, Ohio. The means of control remained the same as in those flights, but the position of the controlling levers and their directions of motion had to be altered in order to permit the operator to take a sitting position. A seat for a passenger was added. The engine used in 1905 was replaced by a later model, one of which was exhibited at the Aero Club Show at New York in 1906. Larger gasoline-reservoirs and radiators were also installed.

We undertook these experiments in order to test the carrying capacity of the machine, and to ascertain its speed with two men on board, as well as to regain familiarity in the handling of the

\* Beautiful and luscious mulberries also grow with wonderful rapidity and luxuriance. Cuttings stuck in the ground at the proper time of the year will take root and send up great shoots in a wonderfully short time; and sometimes you will get *some* pretty fair fruit the very first year.

machine after a period of almost three years without practice. No attempt was made to beat our record of distance made in 1905.

The first flights were made over a straight course against winds of 8 to 18 miles an hour. The equilibrium of the machine proving satisfactory in these flights, we began to describe circles, returning and landing at the starting-point. These flights covered distances of from 1 to 2½ miles.

On the 14th of May a passenger was taken on board. In the first flight the motor was shut off at the end of 29 seconds to prevent running into a sand hill, toward which the machine was started. But in the second the machine carried the passenger and operator for a flight of 3 minutes and 40 seconds, making a circle, landing near the starting-point. The wind, measured at a height of 6 ft. from the ground while the machine was flying, had a velocity of 18 to 19 miles an hour. The distance traveled through the air as registered by an anemometer attached to the machine was a little over 2½ miles, which indicated a speed of about 41 miles an hour. A speed as high as 44 miles an hour was reached in an earlier flight, with only one man on board.

In a later flight, May 14, a false movement of a controlling lever caused the machine to plunge into the ground when traveling with the wind at a speed of about 55 miles an hour. The repairs of the machine would have necessitated a delay of five or six days; and as that would have consumed more time than we had allowed for the experiments we discontinued them for a time.

Besides this there is quite a long article by Byron R. Newton, correspondent of the New York *Herald*. From his account I extract as follows:

When the little band of correspondents arrived at Manteo they decided to feel out the ground by sending one of their number to ascertain if there was any change in the Wrights' policy of secrecy. It was a day's journey, and a fruitless one. When the scout reached the aerodrome, nestled between Kitty Hawk and Kill Devil Hills, the Wrights were about to make a flight; but at the approach of stranger they wheeled the aeroplane back into the building, closed the doors, and advanced to meet their visitor. They were civil, but very firm. "We appreciate your good intentions," they said, "but you can only do us harm. We do not want publicity of any sort. We want to go on with our experiments; but so long as there is a stranger in sight we shall not make a move. Come back a month from now and we will show you something worth telling to the world. At present we are simply experimenting with new features of our machine."

Then one of the brothers and their assistant mechanic walked with the correspondent back to his boat and watched it far out on the sound toward Manteo.

The next morning at 4 o'clock, equipped with a guide, water, and provisions we set out determined to ambush the wily inventors and observe their performance from a hiding-place in the jungle. After a tedious journey over sand hills, through long vistas of pine forest, and through miles of swamp and marsh land in which two of the men narrowly escaped the poisonous fangs of moccasins, we found a spot opposite the aerodrome, commanding a clear view of the beach and sand hills for a distance of five miles in either direction. There for four days we lay in hiding, devoured by ticks and mosquitoes, startled occasionally by the beady eyes of a snake, and at times drenched by heavy rains. But it paid. We saw what few human eyes had ever witnessed before, and had the satisfaction of telling the world about it.

Often we wondered if those men ever slept. They were at work before the sun came up; they frequently made flights in the early twilight, and lamps were flickering about the aerodrome until late in the night.

The first flight we all witnessed was made early in the morning. As we crept into our hiding-place we could see that the doors of the aerodrome were open and the machine standing on its mono-rail track outside. Three men were working about it and making frequent hurried trips to the aerodrome. Presently a man climbed into the seat while the others continued to tinker about the mechanism. Then we saw the two propellers begin to revolve and flash in the sunlight. Their sound came to us across the sand plain something like the noise of a dirigible balloon's propellers, but the clacking was more staccato and louder. The noise has been described as like that of a reaping-machine, and the comparison is a very good one. We were told by a mechanic who assisted the Wrights that the motor made 1700 revolutions a minute, but was geared down so that the propellers made but 700 revolutions.

For several seconds the propeller blades continued to flash in the sun, and then the machine arose obliquely in the air. At first it came directly toward us, so that we could not tell how fast it was going except that it appeared to increase rapidly in size as it approached. In the excitement of this first flight, men trained to observe details under all sorts of distractions forgot their cameras, forgot their watches, forgot every thing but this aerial monster chattering over our heads. As it neared us we could plainly see the operator in his seat working at the upright levers close by his side. When it was almost squarely over us there was a movement of the forward and rear guiding-planes, a slight curving of the larger planes at one end, and the machine wheeled about at an angle every bit as gracefully as an eagle flying close to the ground could have done.

It appeared to be 25 or 30 feet from the ground; and, so far as



we could judge by watching its shadow sweeping along the sand, it was going about 40 miles an hour. Certainly it was making the average speed of a railroad train.

After the first turn it drove straight toward one of the sand hills as if it were the intention of the operator to land there; but instead of coming down, there was another slight movement of the planes and the machine soared upward, skimmed over the crest of the mountain, 240 feet high, and disappeared on the opposite side. For perhaps ten seconds we heard indistinctly the clatter of the propellers, when the machine flashed into view again, sailed along over the surf, made another easy turn, and dropped into the sand about 100 yards from the point of departure. No sooner had it touched the sand than men started from the shed with two wide-tired trucks. These were placed under the machine, the motor started, and the aeroplane at once became a wind wagon, rolling itself back to the starting track with the power of its own propellers. After each flight all the mechanism was examined in most painstaking manner, and the operator always came down when the slightest thing about the machinery was found to be working imperfectly.

On several occasions we saw the machine sail straight away up the beach until it was a mere speck, scarcely distinguishable from birds and other indistinct objects near the line of the horizon. During these flights the sound of the propellers would be lost altogether until the machine turned about and came back, frequently landing within a few feet of the starting-point. These long flights must have covered a distance of four to six miles.

As our readers may be curious to know many men at the present time have actually been able to fly without the aid of a dirigible balloon, we give the following:

THE SEVEN MEN IN AMERICA WHO HAVE FLOWN IN MOTOR-DRIVEN AEROPLANES.

Wilbur Wright, Orville Wright, A. M. Herring, Thomas Selfridge, F. W. Baldwin, G. H. Curtiss, J. A. D. McCurdy.

Mr. Curtiss, so far as we can find out, has flown a greater distance—1020 feet—on first trial than any other aviator in the world. The time was 19 seconds.

Last, but not least (in my opinion) I hold in my hand a card postmarked Montaigne, Paris. Underneath the picture of L'Arc de Triomphe there are just five words that I prize very highly. These words are, "With kind regards, Wilbur Wright." I prize them because they remind me that my good friend Wilbur Wright, even if he is "away up in the air," and traveling all over the world, still remembers his old friend A. I. Root.

## POULTRY DEPARTMENT

### HOPPER FEEDING, ETC.

So far in my poultry experience I have been in the habit of letting my fowls, old and young, help themselves to their rations. Even if it were true that there are advantages in feeding only at certain times, and just what the fowls pick up clean, it would be very inconvenient for me to be around at these regular periods; and I have had such good success by keeping the food constantly before them, or where they could get it when wanted, that the saving in labor to me is worth more than the extra feed required by hopper feeding; and I am sure that none of my poultry, either young or old, ever suffer, even a few hours, from a lack of food. There is, however, one great objection to this manner of feeding. The sparrows, robins, blackbirds, and other songsters, soon "catch on." I thought I had circumvented them by having the feed in a pen of poultry-netting, and letting the fowls get in and out by an underground tunnel. But the birds soon learned to use this tunnel almost as well as the chickens. Just while I write, it seems as if all

the birds in the vicinity had discovered that we not only have a large mulberry-tree, another one of early sweet cherries, but also *wheat* and *corn ad libitum* to fatten the birds and keep them in good cheer. I have circumvented the birds for a time, but I do not know how long it will work. The food is all placed upstairs in that little house shown on page 638, May 15. If the birds do find their way upstairs, as the chickens do, the sight of the blue sky through the poultry-netting above their heads prevents their getting out the same way they got in. I have not yet decided how to dispose of the birds that have got caught under the poultry-netting. It seems too bad to kill the little fellows, and Mrs. Root suggests that it is against the law to kill song birds. Of course sparrows can be disposed of; but I find quite a lot of other birds helping themselves to the wheat and corn provided for poultry. I have not looked up the law in regard to the matter; but I can not for a moment think that the farmer or fruit-grower is prevented from killing birds that are destroying his crops. We have a large mulberry-tree that bears great quantities of mulberries; but we have had scarcely a ripe berry here in the North for several years past, because the birds get there before the fruit is fairly ripe. This year we succeeded in getting a few nice early cherries before the birds found out *where* they were and how *good* they were.

### HENS LAYING BETTER WITHOUT MALE BIRDS.

The *American Poultry Advocate* for June says that the Geneva, N. Y., Agricultural Experiment Station made some experiments in keeping laying hens with and without a male bird. This bulletin, in closing up its observation, makes the following statement:

A pen of pullets, kept without a male, produced eggs at about 30 per cent less cost than an exactly similar pen with which a cockerel was kept.

Another pen, without a male, gave during the first three months about the same proportionate excess of product over an exactly similar pen with which a cockerel was kept.

In each of the two pens without male birds some pullets had begun to lay from one to two months earlier than any in the corresponding pens in which male birds were kept.

Now, friends, if this is true, think of the tremendous loss of food and loss of eggs resulting from keeping a lot of male birds running loose that are of no use to anybody. If it is not true, will somebody who is competent let us know about it as soon as possible? When you want eggs for hatching, select your best breeders and put them in a pen by themselves with your choice male birds; but do not, for the sake of humanity, if for no other reason, let your young pullets and laying hens be worried and annoyed by male birds that should have been disposed of a long while ago.

### BREAKING THE WORLD'S RECORD; A PEN OF SIX HENS LAY AN AVERAGE OF 255 EGGS EACH FOR ONE YEAR.

We clip the following from the *Australian* for April 11:

Much interest has been felt in poultry circles during the past few weeks as to the probable result of the twelve-months' egg-laying competition, which came to a conclusion at the Roseworthy Agricultural College, South Australia, March 31. The two leading pens have been in immediate proximity with their output of eggs during the last week or two, and on March 29, or two days before the close of the competition, both the pens were on the same mark. After that a slight alteration occurred, and at the close of the competition the result was that Mrs. A. E. Kin-

near's pen had won with 1531 eggs for the twelve months. The pen entered by Mr. Padman laid during the same period 1528 eggs, the difference between them being only three eggs. This remarkable result broke the previous world's record, and it is quite noteworthy that the former record was established in Western Australia with 1494 eggs. Previous to the close of the competition two Victorian poultry-breeders purchased the two leading pens, Messrs. Rogen and Andrews securing the now first-prize winners, and Mrs. A. J. Duncan purchasing those that are now second. Practically there is nothing between the merits of the respective pens, and the purchasers may be congratulated on their spirited efforts to secure high-class laying strains. Both pens consist of six White Leghorn hens.

The competition was held under the auspices of the Utility Poultry Club, of South Australia, and under government supervision.

Perhaps I should have said we have hens here in America that have gone considerably higher than 255 eggs in one year; but there is no record—at least I suppose so—of a whole pen of six hens making any thing like the above. The result is of more value than one might at first think; for this woman who selected these fowls and entered them for competition had already demonstrated that each one of the six was a good layer; and as the experiment was under the supervision of the government, there certainly can be no mistake about it. Please note that not only has Australia beaten the world, but that it was done by a woman.

## HIGH-PRESSURE GARDENING

By A. I. ROOT

### GROWING ALFALFA AND SWEET CLOVER WITH INOCULATED SOIL.

I visited our Ohio Experiment Station a few days ago, mainly to look over their experiments with alfalfa and inoculated soil. There were several plots of alfalfa devoted to this matter of inoculating soil with nitrogen bacteria. The evidence was exceedingly plain that the inoculated soil produced a market benefit in every instance; but the pure cultures furnished by the government, and those from other sources, showed no result whatever. While there is a possibility that this latter process of introducing the nitrogen-gathering nodules may be a success, their efforts at Wooster do not show any benefit whatever. When we come, however, to bringing in soil where either alfalfa or sweet clover has been plainly showing nitrogen nodules, a very marked improvement is apparent at a glance. Prof. Williams, who has the matter in charge, informed me that some time ago he put out two little plots of alfalfa, as much alike as it was possible to make them, except that on one plot they mixed into the soil some dirt taken from the side of the road where sweet clover had been growing quite luxuriantly. He said the alfalfa was almost twice as tall where the inoculated soil was used. Prof. Green remarked in regard to this, and some other experiments with sweet clover, something like this:

"It is really astonishing that some farmers should complain about seeing sweet clover in fence-corners or along the highways when it is really one of the best friends the farmer has. It takes root, and grows in ground too poor to grow any other plant; but after it has taken ni-

trogen from the air, and made the soil fertile where it grew, it drops out of the way and lets other plants come in and grow that could not have grown on the soil had not the clover first taken root and made the soil fit for other things."

Now, in summing up, every farmer (and I might almost say every bee-keeper on the face of the earth) should grow at least a little patch of alfalfa if it can be made to grow on your soil; and the very shortest and quickest method of getting alfalfa started is to encourage sweet clover first. If you already have sweet clover, you are so much ahead. If you haven't, by all means get it started and give it a trial on the poorest and most unfertile soil you have on your place. The way some people have complained about sweet clover would almost remind us of what the good Book tells us about entertaining strangers, as we may, by so doing, entertain angels unawares.

### SWEET CLOVER—SOMETHING MORE ABOUT IT.

The following is from *Hoard's Dairyman*:

What is the inclosed plant? It grows on the roadside to about three feet in height, and the roots are covered with nodules like clover. Is it of the alfalfa family? J. M. G. Oak Grove, Md.

To the above the editor replies as follows:

The specimen inclosed appears to be the plant commonly called sweet clover. Its botanical name is *Melilotus alba*. It can not be said to belong to the alfalfa family, but it serves as a host for the same species of bacteria that the alfalfa plant requires. Soil from a locality where sweet clover grows is often used for inoculating a field for alfalfa.

The important and the principal point in the above is the last sentence. If it is true that soil taken from a locality where sweet clover grows luxuriantly can be used for inoculating a field for alfalfa, then sweet clover assumes an importance in agriculture that we have not heretofore given it credit for.

Below is something that seems to come from the same writer we quoted on p. 710, last issue. We clip it from the *Kansas Farmer*:

Many of our hills that have been worn out and washed away by having cotton planted on them for the past sixty years are now in sweet clover, and they are making money for their owners. If Mr. Grimes ever succeeds in making it a penitentiary offense to grow melilotus I am afraid we Southerners who live in the lime belt will be tempted to secede again. So here is hoping the national legislators will curb the trusts but not the sweet clover.

The editor of the *Kansas Farmer* speaks in regard to the above as follows:

A few years' growth of sweet clover on gumbo land in Kansas will make first-class corn and alfalfa land of it. Alfalfa is nowhere in comparison as an improver of soil.

Since the above was dictated I have received the following from Hon. Charles E. Bessey, of the University of Lincoln, Nebraska:

Mr. A. I. Root:—I am very much obliged to you for the letter which you wrote me on May 29 in regard to sweet clover; and I am glad to know that you back me up in what I said rather mildly in my short note in the *Breeders' Gazette*. I realized that a good many men are quite "touchy" about sweet clover, and that is why I put it as mildly as I did. I think that, in a few years, we shall be able to push the matter and restore sweet clover to its proper place. I have never thought it a bad weed at all. I do not understand why people have taken such a great prejudice to it.

Lincoln, Neb., June 4, 1908.

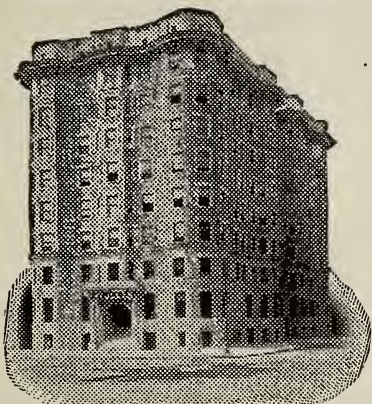
CHARLES E. BESSEY.

It would be strange indeed if our experiment stations and professors of agriculture were making a mistake, or were not well posted in regard to the value of sweet clover.



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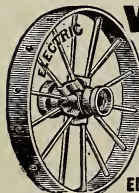
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FALL RIVER, MASS., April 10, 1908.

*F. Danzenbaker:*—Kindly send booklet about your smoker as per your ad. in GLEANINGS, current issue, and for which I thank you in anticipation. I had ten hives, average good, last fall; now I have five that survived, and in Danzenbaker hives, and as I write they are lugging in pollen in good shape. Yours, H. N. BRIGHTMAN, Fall River, Mass.

(The defunct bees were in ten-frame Langstroth.)

Pretty good! five Danz. lived, five L. died.

**F. DANZENBAKER, Patentee.**

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| Two-comb nuclei, no queen . . . . .     | 2.25   | 12.00  | 22.00   |
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Nuclei with untd queen: 1-fr., \$1.75; 2-fr., \$2.25; full colonies, \$4.75.  
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## GOLDEN AND CLOVER STOCK.

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Mr. W. Z. Hutchinson, editor of the *Bee-keepers' Review*, Flint, Mich., says, "As workers, I have never seen them equalled. They seem possessed of a steady, quiet determination that enables them to lay up surplus ahead of others. Easier bees to handle I have never seen."

My queens are all bred from my best long-tongued three-banded red-clover stock (no other race bred in my apiaries), and the cells are built in strong colonies well supplied with young bees.

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| Untested . . . . .                    | \$1.00 | \$5.00 | \$9.00 |
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| Select tested . . . . .               | 2.00   | 10.00  | 14.00  |
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Add queen wanted to above.

I shall offer no Caucasians for sale this season.

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**W. H. Laws** is again on hand for the coming season with a larger stock of queens than ever before. He sold 400 queens to a New Mexico producer last May who wrote, "Your stock is far ahead of those Eastern queens I have been buying," and has placed his order for 1000 more of the Law queens to be delivered in May and June coming.

Others write that, if they had purchased all Laws queens, their crop of honey would have been doubled. Testimonials enough to fill this book. If you are going to improve your stock, had you not better invest-gate?

Single queen, \$1.00; dozen, \$10.00; breeders, the best, each, \$5.00. W. H. LAWS, Beeville, Bee Co., Texas.

## MILLER'S SUPERIOR ITALIAN QUEENS

By RETURN MAIL, bred from best Red-clover working strains in U. S. No better hustlers; gentle, and winter excellent; untested, from my SUPERIOR breeder, 1, \$1.00; 6, \$5.00; 12, \$9.00. After July 1st, 1, 75c; 6, 4.00; 12, \$7.50. Special prices on lots of 50 or more. Satisfaction and safe arrival guaranteed. Circular free. ISAAC F. MILLER, :: Reynoldsville, Pa.

# Queens Queens

of the

## FINEST POSSIBLE BREEDING

BRED BY

**F. J. WARDELL,**  
UHRICHSVILLE, OHIO, U. S. A.

After many years' experience as head queen-breeder for The A. I. Root Co., I am now breeding bees at the above address. My stock is equal to any now advertised, and my long experience enables me to judge very accurately the value of any strain. Mine is the celebrated red-clover stock, which has given so much satisfaction to thousands of buyers for a number of years past. If you desire something very select for breeding purposes, write to me, stating your wants, and the same will be supplied. I have no cheap or inferior queens to sell. My prices for the season are as follows:

|                                  | May to June.      |
|----------------------------------|-------------------|
| Untested queen . . . . .         | \$1.25            |
| Select untested queen . . . . .  | 1.50              |
| Tested queen . . . . .           | 2.50              |
| Select tested queen . . . . .    | 3.50              |
| Breeding queens . . . . .        | 6.00              |
| Select breeding queens . . . . . | 9.00              |
| Extra select . . . . .           | 1 year old, 12.00 |

No untested queens sent before May 15; but to secure your queens early in the season it is necessary to order now. Absolutely, all orders filled in rotation.

# 5000 QUEENS

of the famous 3-banded LONG-TONGUE RED-CLOVER STRAIN OF ITALIAN BEES is what I want to sell this season.

My bees GATHER HONEY if there is any to get; ARE LITTLE inclined to swarm and sting; they please such people as The A. I. Root Co., R. F. Holtermann, W. Z. Hutchinson, Morley Pettit, etc., and if they don't please you, send in your kick.

Queens of all grades now ready.

|                                  | 1      | 6      | 12     |
|----------------------------------|--------|--------|--------|
| Untested queens . . . . .        | \$1.00 | \$5.00 | \$9.00 |
| Select untested queens . . . . . | 1.25   | 6.00   | 11.00  |
| Tested queens . . . . .          | 1.50   | 8.00   | 15.00  |
| Select tested queens . . . . .   | 2.00   | 11.00  | 20.00  |
| Breeders, \$5.00 to \$7.00.      |        |        |        |

W. O. VICTOR (Queen Specialist), Hondo, Tex.

# QUEENS

of the Robey strain of three-banded Italians during the season of 1908. Warranted queens, 75 cts. each; \$4.25 per six; \$8.00 per doz. Tested queens, \$1.00 each. Satisfaction or money refunded. L. H. ROBEY, Worthington, W. Va.

**A FULL LINE** of Bee-keepers' Supplies. My patent Section-machine at half-price. A new queen-nursery, and queen-rearing outfit. Queens from imported Italians, Caucasians, Carniolans; and Adel queens. Send for catalog and price list. <sup>160 Newton</sup> Chas. Mondeng, Ave. N., Minneapolis, Minn.

# CHOICE QUEENS

ITALIANS AND CARNIOLANS.

1 untested, 75c; 12, \$7.50. 1 tested, \$1.00; 12, \$11.00.

1 selected tested, \$2.00. 1 breeder, \$3.00.

Nuclei, full colonies, and bees by the pound at low prices.

**CHAS. KOEPPEN, Fredericksburg, Va.**

## GOLDEN-ALL-OVER and RED-CLOVER ITALIAN QUEENS

My stock is the result of years of careful selection, and is equal to any in the country. The prices are only such as to insure long-lived, prolific queens, whose workers will be hardy and good honey-gatherers. Write for 1908 circular.

**PRICES.**

|                                                  |        |        |        |
|--------------------------------------------------|--------|--------|--------|
|                                                  | 1      | 6      | 12     |
| Untested                                         | \$1.00 | \$5.00 | \$9.00 |
| Select untested                                  | 1.25   | 6.50   | 12.00  |
| Tested, \$1.75 each; select tested, \$2.00 each. |        |        |        |

Positively all orders filled in rotation.

**Wm A. Shuff, 4426 Osage Ave., Philadelphia, Pa.**



## DANIEL WURTH'S QUEENS.

Golden Five-banded  
and Three-banded.

Finest that can be had at any price; large and prolific. Have had 35 years' experience. Having moved from Pitkin, my address is Fayetteville, Ark., R. F. D. box 5, A.

Untested, \$ .75 each; 6, \$4.35  
Tested, 1.00 each; 6, 5.50

## WESTERN Bee-keepers

.. will ..

### SAVE TIME AND FREIGHT

by ordering **ROOT'S GOODS** .  
from Des Moines, Iowa.

Complete **NEW STOCK** now on hand. Our stock includes a full line of Danzenbaker hives and all other up-to-date goods.

Remember we sell at Root's factory prices, and offer liberal discounts now.

Estimates cheerfully given. Send us a list of your wants, and get our net prices by letter.

Our 1908 catalog is now ready to mail. Write for it to-day. Address

**JOS. NYSEWANDER**  
565-7.W.7th St., Des Moines, Ia.

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On a  Line

to all points in the South and  
Middle West.

Send for our free illustrated catalog of

## Root's Bee-supplies

We sell at factory prices.  
Send us a trial order.

**Beeswax Wanted.**

**Blanke & Hauk Supply Co.**

DEPT. B.

1009-11-13 Lucas Ave. **St. Louis, Mo.**

Manufacturers and Jobbers of Dairy, Creamery,  
Ice-cream, and Poultry Supplies.

## North Texas Bee-keepers

will find Dallas the best point from which to purchase supplies. We have a carload of **ROOT'S GOODS IN STOCK**, and sell them at the Factory Prices. Don't forget that we can furnish any thing in the way of Field or Garden Seeds, Plants, and Poultry Supplies. Our large illustrated catalog for 1908 free on application. Mention **GLEANINGS** when you write.

**TEXAS SEED AND  
FLORAL COMPANY**

Dallas, : : . Texas



# One Thousand Families Wanted

for

## Government-Irrigated Homesteads

Representative of the Government to Show the Land

On Tuesdays, July 21st, August 4th and 18th, September 1st and 15th, 1908, I will personally conduct land-seekers' excursions to the Big Horn Basin and Yellowstone Valley, where there is room for one thousand families on homestead lands irrigated by the Government. My services are free.

The soil is rich, the climate ideal, the water pure, and timber and coal are in abundance. The land is free, and settlers repay the Government actual cost for water—\$45.00 an acre—in ten yearly payments without interest.

Also ground-floor prices for deeded and Carey-act lands.

No cyclones, floods, or drouths.

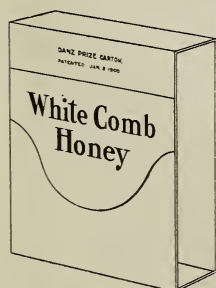
Write for our new folder telling all about these lands. **It's free.**



D. CLEM DEEVER, General Agent  
LAND-SEEKERS' INFORMATION BUREAU  
9 Q Building, Omaha, Neb.

4668

# CARTONS FOR COMB HONEY



We are prepared to furnish these cartons in several styles and in two grades of stock; also in various styles of printing. We can also execute special designs in quantities on special orders. Let us know your wants.

The Danz, open-end carton will enclose a section and pack in the regular shipping-case. We furnish it for 4x5x1½ and 1½, 3¾x5x1½, and the several widths of the 4¼ section. To hold the carton in place on the section you need a rubber band around it. These bands are not furnished with the cartons except at an extra price, and only when so ordered.

The folding carton is of a different pattern from those heretofore furnished. They tuck in at the top and bottom in a neater form, and are without tape handle. Sections packed in these cartons require shipping-cases made a little larger than the regular sizes, but such cases do not require glass. Some of our agencies have on hand some of the old-style cartons in some sizes, which may be supplied on orders unless otherwise specified. These cartons are furnished for all regular sizes of sections; namely, 4¼x4¼x1½ and 1½; also 4x5x1½. Other sizes furnished in quantities on special order.



### Price List of Cartons

Danz, carton, regular size, plain or printed name blank, 50 cts. per 100; 500, \$2.25; 1000, \$4.00. Weight, 4 lbs. per 100.  
Folding cartons, regular sizes and grade, plain, 60 cts. per 100; 500, \$2.75; 1000, \$5.00.  
Folding cartons, regular sizes and extra quality, plain, 75 cts. per 100; 500, \$3.25; 1000, \$6.00.  
Extra for printing stock design, name and address blank, 50 cts. per 1000 one side; 75 cts. both sides for each color.  
For inserting name and address in design at same printing, add 50 cts. for any quantity. For printing in name and address in a stock design, after that has been printed, add 50 cts. for 100; 75 cts. for 500; \$1.00 for 1000. Such cartons can be supplied only from Medina. Special designs or printing quoted on application.

### Honey-Labels

We are manufacturers of labels of almost any description. Will furnish estimates from sketches. Send for our complete catalog of forty different labels in black and colors.

**The A. I. ROOT COMPANY, MEDINA, OHIO**

## CLASSIFIED ADVERTISEMENTS

Notices will be inserted in these classified columns at 25 cents per line. Advertisements intended for this department can not be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

## Help Wanted

WANTED.—A girl or woman to cook and do general housework in a small family. References exchanged and correspondence invited. A good home and wages for the right one.

Rt. 1. E. P. ROSE, M. D., Dukedom, Tenn.

## Poultry Offers

A. I. Root's Bee-goods, Poultry-supplies, Seeds, etc.  
STAPLER'S, 412-414 Ferry St., Pittsburgh, Pa.

FOR SALE.—Indian Runner duck eggs from choice stock, \$1.00 per 12; \$4.00 per 55; \$6.50 per 100.

KENT JENNINGS, Mt. Gilead, O.

## Food Products.

Send for circular and price list of Smucker's apple butter. Guaranteed to be absolutely pure. Agents wanted.

J. M. SMUCKER, Orville, Ohio.

## For Sale

FOR SALE.—Mated thoroughbred homer pigeons at \$1.00 per pair.

FRANKLIN G. FOX, Erwinna, Pa.

FOR SALE.—Tasmanian necklace shells, any quantity. Sam ple sent.

G. H. SMITH, Ramsgate, Tasmania.

FOR SALE.—300 lbs. Dadant's thin brood foundation, size 8x17 inches.

C. J. BALDRIDGE, Kendaia, N. Y.

FOR SALE.—200 cases of 5-gal. cans, good as new, at 25 cts. each.

G. L. BUCHANAN, Holliday's Cove, W. Va.

FOR SALE.—Four-frame reversible Cowan extractor, used but a little; cheap.

D. H. COGGSHALL, Groton, N. Y., R. 12.

FOR SALE.—One four-horse feed-grinder and power complete; one five-horse gasoline-engine, new.

G. C. H. ZURBURG, Topeka, Ills.

FOR SALE.—A full line of bee-keepers' supplies; also Italian bees and honey a specialty. Write for catalog and particulars.

W. P. SMITH, Penn, Miss.

FOR SALE.—Beautiful long-haired Persian and Angora cats and kittens; solid whites and various colors; none better. Send stamp for written reply.

KENSINGTON CATTERY, Marion, Ohio.

FOR SALE.—If you want an illustrated and descriptive catalog of bee-keepers' supplies for 1907 send your name and address to

FRANK S. STEPHENS,  
Paden City, W. Va.

FOR SALE.—200 cases of 5-gallon cans. All are free from rust inside, and the majority have been used but once. Two cans in a case; 10 cases or more, 25 cts. per case.

J. E. CRANE & SON, Middlebury, Vermont.

FOR SALE.—Alexander wire bee-veils, no pins or sewing required; made from the very best wire cloth at 60 cents each, postpaid.

FRANK ALEXANDER,  
Delanson, N. Y.

FOR SALE.—Best Wisconsin sections, 1000, \$4.00; 2000, \$7.75; 3000, \$11.00; 5000, \$17.50; No. 2, 50 cts. less; plain, 25 cts. less, 24-lb. 2-in. glass shipping-case, 14 cts. Catalog free.

H. S. DUBY, St. Anne, Ill.

FOR SALE.—Well-bred Scotch Collie pups, farm raised, from stock that works. Price \$4.00 and \$5.00.

E. E. LARCOMB, New Dover, O.

FOR SALE.—About 1300 or 1400 cases, two five-gallon cans each, practically free from nail-holes, and were new tins when originally shipped to us. Make us an offer.

CLEVELAND HEALTH FOOD CO., Cleveland, O.

Don't bother with cans. Kegs are cheaper and easier to fill and handle. 160-lb. pine kegs, with 2-in. hole and plug, 50 cts. each, f. o. b. factory. Orders given prompt attention. Send list of supplies needed. I can save you money.

N. L. STEVENS, Moravia, N. Y.

FOR SALE.—75 eight-frame Root hives with good worker combs; used two seasons; also lid and bottom; \$1.60 each. One hundred 4½ supers, trimmed with sections and foundation; used one season; 40 cts. each. Sixty 10-frame hives and five Danzenbaker hives, with combs wired, all Root's goods, \$1.75 each, without super. Thirty 8-frame supers, trimmed, \$3.00 each.

H. A. ROSS, Evansville, Indiana.

## Wants and Exchanges

WANTED.—Refuse from wax-extractors and old combf or cash.

ARCHIE COGGSHALL, Groton, N. Y.

WANTED.—Refuse from the wax-extractor, or slumgum State quantity and price.

OREL L. HERSHISER,  
301 Huntington Ave., Buffalo, N. Y.

## Bees and Queens

Golden Italian queens by return mail, 50c.

J. F. MICHAEL, Winchester, Ind.

FOR SALE.—75 colonies of bees in eight-frame Dovetailed; no disease; \$1.75 per colony. F. C. MORROW, Blevins, Ark., R. 1.

FOR SALE.—100 Heddons supers, wired combs, for 50 cents each.

W. L. COGGSHALL, Groton, N. Y.

Italian queens, Adel strain, untested, 65 cts.; select untested, 85c.

J. R. MCCORKLE, Wingate, Ind., R. 5.

FOR SALE.—Italian and Carniolan queens, untested, 75 cts.

GEORGE E. KRAMER, Valencia, Pa.

FOR SALE.—800 colonies of bees; for particulars, address

DR. GEO. D. MITCHELL & CO., Ogden, Utah.

FOR SALE.—Italian queens, hustlers. Untested, 65c; tested, \$1.00.

MRS. J. W. BACON, Waterloo, N. Y.

We still have a few of those misnamed Caucasian queens, good stock, \$1.00 each.

A. I. ROOT CO., Medina, Ohio.

FOR SALE.—Northern-bred red-clover queens. Untested, 75 cts.; tested, \$1.00.

E. S. WATSON,  
R. F. D. No. 2, Madison, Maine.

FOR SALE.—Italian, Carniolan, and Caucasian queens. Untested, 75 cts.; 12, \$8.50; virgins, 40 cts.; 12, \$4.50. Stamps not accepted.

EDWARD REDDOUT, Baldwinville, N. Y.

Bees by the pound in July, caged on combs with stores, \$1.00. With misnamed queens, \$1.25. With untested queens, \$1.60. In lots of 10 lbs. only or more.

B. F. AVERILL, Howardsville, Va.

Red-clover Italian queens exclusively, one of the best honey-gathering strains in existence. Untested, 75 cts. each; 6 for \$4.25; virgin, from pure Italian mothers, 30 cts.

F. M. MAYBERRY, Lederach, Pa.

FOR SALE.—Italian bees and queens now ready. Untested, \$1.00; tested, \$1.50. Bee-keepers' supplies, Root's goods. Send for prices. Eggs from Silver-laced Wyandotte poultry.

N. V. LONG, Biscoe, N. C.

Carniolan queens from imported mother mated to drones from imported mother in yard remote from other bees, \$1.00 each; \$9.00 per dozen. Queens not purely mated, also Banat queens not purely mated, 75 cts. each; \$7.50 per dozen.

E. H. HAFFORD, Fennville, Mich.



## Real Estate for Bee-keepers

FOR SALE.—56½ acres, good comfortable buildings; water, timber, fruits of all kinds; two miles of Sweetwater, Monroe Co., Tenn.; 50 stands of bees in eight-frame hives; can not care for them on account of poor health. R. N. RANDALL, Sweetwater, Tenn.

## Honey and Wax for Sale

FOR SALE.—New No. 1 white clover comb honey at \$3.50 per case of 24 sections; less than six cases, 25 cts. per case extra. QUIRIN-THE-QUEEN-BREEDER, Bellevue, O.

FOR SALE.—5000 lbs. of clover and amber honey in 160-lb. kegs. C. J. BALDRIDGE, Homestead Farm, Kendala, N. Y.

FOR SALE.—Clover and raspberry honey. Rich, ripened on the hives in sealed combs. Delicious flavor preserved entire by canning as extracted. 120-lb. case (two cans), \$10.75. 10,000 lbs. ripening on hives. I can ship a few choice orders at once. Sample on request. F. B. CAVANAGH, Boscobel, Wis.

FOR SALE.—Choice extracted honey for table use—thick, well ripened, delicious flavor; color, light amber; remained on hives for months after being sealed over. Price 8 cts. per lb. in 60-lb. cans, two to case. Sample, 10 cts. J. P. MOORE, queen-breeder, Morgan, Ky.

## Honey and Wax Wanted

WANTED.—Two cars choice white extracted honey. We pay cash. We have also for sale a splendid lot of second-hand 60-lb. cans. J. A. BUCHANAN & SONS, Holliday's Cove, W. Va.

WANTED.—White ripe extracted honey; will pay cash. GEORGE RAUCH, No. 5343 Hudson Boulevard, North Bergen, N. J.

WANTED.—Comb, extracted honey, and beeswax. State price, kind, and quantity. R. A. BURNETT, 199 South Water Street, Chicago, Ill.

## Bee-keepers' Directory

Bee-keepers' Supply Co., Lincoln, Neb. We buy car lots of Root's goods. Save freight. Write.

ITALIAN QUEENS from imported mothers; red-clover strain, \$1. A. W. YATES, 3 Chapman St., Hartford, Ct.

ITALIANS, CARNIOLANS. No disease. Two-comb nucleus with queen, \$3.00. A. L. AMOS, Comstock, Nebraska.

Golden-all-over and red-clover Italian queens; circular ready. W. A. SHUFF, 4426 Osage Ave., Philadelphia, Pa.

I club a high-grade Italian queen with GLEANINGS, new or renewal. W. T. CRAWFORD, Hineston, La.

ITALIAN BEES, queens, honey, and Root's bee-keepers' supplies. ALISO APIARY, El Toro, Cal.

Golden Italian queens, 75 cts. each. Satisfaction guaranteed. WALTER S. HOSS, 1127 Blaine Ave., Indianapolis, Ind.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York City.

For bee-smoker and honey-knife circular send card to T. F. BINGHAM, Farwell, Mich.

GOLDEN yellow Italian queens—my specialty. Price list free. E. E. LAWRENCE, Doniphan, Mo.

ROOT'S BEE SUPPLIES. Send for catalog. D. COOLEY, Kendall, Mich.

SWARTHMORE Golden-all-over queens—the famous original stock. Queen-rearing outfits and books; 40-page catalog. E. L. PRATT, Swarthmore, Pa.

Mott's long-tongues by return mail, also goldens—hardy, yet gentle, but little or no smoke. E. E. MOTT, Glenwood, Mich.

Root's bee-supplies at factory prices, *Black Diamond Brand Honey*, and *bee-literature*. Catalog and circulars free. GEO. S. GRAFFAM & BRO., Bangor, Maine.

Order your bee-supplies from Superior Honey Co., Ogden, Utah, at Root's catalog prices. You save time and money. Largest dealers in the West.

Have you seen Hand's queen circular? It's an eye-opener. Your address on a postal card will bring it. It will pay you to send for it. J. E. HAND, Birmingham, Erie Co., Ohio.

QUEENS.—Improved red-clover Italians, bred for business, June 1 to Nov. 15, untested queens, 60 cts.; select, 75 cts.; tested, \$1.00 each. Safe arrival and satisfaction guaranteed. H. C. CLEMONS, Boyd, Ky.

Improved Italian queens now ready. Nuclei and colonies May 1 to 10. Over twenty years a breeder; 500 colonies to draw on. Free circulars and testimonials. For prices see large advertisement in this issue. QUIRIN-THE-QUEEN-BREEDER, Bellevue, O.

ITALIAN BEES AND QUEENS. I breed three-banded stock only, and use the finest breeding stock to be had. For prices, see display advertising columns in this issue. Send for price list. Twenty-five years' experience. F. J. WARDELL, Uhrichsville, O.

TENNESSEE QUEENS.—Best that experience can produce. Untested three-band and goldens, \$1.00 each; 6 for \$5.00; 12 for \$9.00. Caucasians and Carniolans, \$1.25 each. Write for circular; order goldens from Ben G. Davis; others from John M. Davis, Spring Hill, Tenn.

Breeding queens of pure Caucasian and Carniolan races—price \$3.00. Order from A. E. Titoff, Expert in Apiculture, with Russian Department of Agriculture, Kieff, Russia. Remit with orders. Correspondence in English.

## Forty Years Among the Bees

Dr. C. C. Miller

This is the plain unvarnished story of Dr. Miller's bee-keeping experiences for a term of forty years and more. He was probably the first man in America to depend solely on bees for a living, and for this reason alone the book is well worth reading. He has taken a prominent part in building up the bee industry of America in all those fateful years from the time bee culture was an infant industry until now. This has given him a fund of rich experience to draw on, and he freely uses it for the benefit of his readers. He has adopted throughout his book a simple conversational style which makes him readily understood, and renders the book easy reading to any bee-keeper. Even the beginner enjoys it. To the comb-honey producer it is of engrossing interest, for Dr. Miller is what we term a comb-honey man. In a delightful way he tells what he has done in the past, what he is doing now and what he intends to do in the future, giving the reasons for his change of mind. The extracted-honey men also like to read this simple narrative because the principles of comb-honey production are much the same as in producing extracted honey. He does not hide away the smallest detail, and one soon becomes acquainted with his family circle, his home and its surroundings, his helpers, his out-apiaries, and all that goes to make up home life and life's work. This impresses the reader in a way that the ordinary bee-keepers' manuals can not do. However, the work is not intended as an instruction-book in bee-keeping, but it affords an excellent supplement to any of our well-known manuals of bee culture. No comb-honey man should be without it, because its author is one of the most successful comb-honey men this country has produced. He has no "secrets," but tells all he knows in a way that is convincing. What adds to the interest is the fact that he lives in a locality not particularly well adapted to bees, because the winters are long and the honey flora somewhat uncertain. The print is large and clear, so that it may be read by lamplight when the bees are in the cellar and the snow lies deep. Order a copy—only a dollar, postpaid.

THE A. I. ROOT COMPANY, MEDINA, OHIO.

## Special Notices by A. I. Root

### OUR CORNFIELD UP TO DATE.

I am happy to tell you that the cornfield mentioned in *Homes* in this issue has now, under the influence of exceedingly favorable weather and careful cultivation, the reputation of being one of the best-looking fields in this part of the State. The second planting came on nicely with favorable weather; but in order to prevent having more than four stalks in a hill, some expensive thinning-out had to be done. But I think it pays, especially at the present price of corn.

### BASSWOOD-TREES—GROWING THEM FOR HONEY, LUMBER, ETC.

I would remind our readers who are interested in the matter that we have a lot of leaflets to give away, with the above title. Since this leaflet was printed in 1905, some of our basswood-trees from seedlings that came up in 1897 are now in bloom, so we can answer, at least to some extent, the question, "How long before a basswood-tree may bear honey?" These I have mentioned are furnishing quite a little bloom in ten or eleven years after the seed was planted. As the trees we send out by mail and express are from three to five years old, I think you may get some bloom from the larger size in five or six years. It will take, however, fifteen to twenty years for basswoods ordinarily to get large enough to furnish honey of any account. But as they are beautiful trees for shade, and are getting to be every year more and more valuable for lumber, I think it is an excellent plan to put them out where you want shade-trees, or where the ground is not particularly valuable for any thing else. We generally expect basswoods to be fairly in bloom by July 4, and more or less honey comes in from basswood all through July. These dates will be earlier in the South and later in the North. In Northern Michigan we get some basswood honey even in August. This year some of our early trees were opening their blossoms on the 18th and 19th of June, which is quite a little earlier than I have ever noticed them before.

### A WATERING AND FEEDING DEVICE FOR LITTLE CHICKS.

A good housekeeper, as you may have noticed, keeps her things put up out of the way. When E. R. R. was a little chap his mother had so diligently instilled into his mind the importance of having his things all hung up neatly and in order that one day he almost cried, and I do not know but he *did* cry, because he could not hang up the cups and saucers; and from that day to this the Roots and Rootlets have all been instructed to hang their things up on the wall instead of letting them lie around on the floor. Even the extra shoes and overshoes must be put away out of sight. When I remonstrated, Mrs. Root explained that the work of sweeping and taking care of the room is very much less when even the shoes and overshoes are hung up on their appropriate nails; and if said shoes are to be some time out of use it is a splendid plan to put them in a light cloth bag and hang the bag up on a nail. This keeps them clean, bright, and shiny, when they are wanted in a hurry when cold weather happens to come unexpectedly.

Well, I am not writing to-day about boots and shoes, nor even about housekeeping, unless, indeed, my notes should come under the head of "Housekeeping for Poultry." If you will look on p. 638, May 15, at that little poultry-house, you will notice there is a stairway for fowls to go up into the loft. Well, under this stairway was a sitting hen; and when her chickens were hatched, to prevent the older chicks from annoying the newly hatched ones and their mother I shut them under the stairway with netting. Now, there is but little room in this small inclosure. But I wanted to provide them with both food and water, and put it in shape so it would take but little room and be protected from dirt and litter. I succeeded admirably by making two little poultry-feeders of pint tin pans after the plan shown in our book, "What to Do," page 178. These pans hang up by appropriate rings, one on each side of the doorway. Every chick has learned its location so it can get water or feed at any time when it is inclined. During the day time I let the hen out; but there is an opening at the bottom to admit small chicks, but not the older ones or the other fowls. Whenever these chicks get hungry or thirsty they go back to their well-known home under the stairway and get refreshment. These little pan feeders hang up so closely against the wall that they occupy almost no room at all. They are put high enough so the chicks can just reach the opening; and as the chicks grow, the pans can be hung to another nail a little higher up on the wall. These feeders have some advantages over any of the other devices I have seen in any of the poultry-books and journals. First, they are so close to the wall that they occupy almost no room at all; secondly, these beveled tops prevent the chicks from standing on them or from catching droppings. If put up as high as the chicks can reach, no trash or filth will even get into the openings; and after some little experimenting I am glad to note that our tinner can afford them at the low price of 15 cts. each, or two for 25 cts. If wanted by mail, the postage will be 6 cts. each extra. Of course, this price is for the smaller sizes. For full-grown fowls we want something made of a good-sized tin pan or washbasin. While the food and water are constantly in sight, none of it can get out until the chicks use it out.

I am so much pleased with this watering-device for baby chicks that I want you all to see it; and so I have decided to send one free to every one who sends \$1.00 for *GLEANINGS* (asking for no other premium) and includes 6 cts. for postage. I will try to give you a picture of it in our next issue.

## SPECIAL NOTICES

### BY OUR BUSINESS MANAGER

Customers of J. W. K. Shaw & Co., Loreauville, La., will please note that, owing to an enforced absence from home, and the want of competent help, they will discontinue sending out queens for a month or two. Will report for duty later.

### SWEET-CLOVER SEED.

It is still early to gather seed from sweet clover; but we desire to make the fact known early that we are in the market when this season's crop is gathered, for several tons of white-sweet-clover seed. We have already contracted for what we shall need of the yellow variety. When you have any to furnish, send us a sample, stating price you ask and quantity you can furnish.

### BEESEX MARKET.

From this date till further notice we will pay 28 cents cash, 30 in trade, for average wax delivered here or at our branch offices. We drop the extra cent a pound we have been paying during the month of June. Be sure to mark your box so it may be identified, and write, telling how many pounds you ship, sending shipping receipt.

### DANZ. SHIPPING-CASES FOR 20 4x5 1/8 SECTIONS.

We have about one hundred cases to hold 20 4x5 sections, all nailed up and packed in reshipping-cases. They have been used, but are clean and in good condition. We offer them as they stand for \$1.50 per crate of 8 cases, or the lot at \$1.25 per crate. This is a special bargain, as they are all ready to pack honey in for shipment at less than the price of new cases in the flat.

### SECOND-HAND 60-LB. CANS.

We have on hand from one to two hundred second-hand five-gallon cans, two in a case, in fair condition, which we offer at \$4.00 for 10 cases; 25 cases or over, at 35 cents. They are all looked over, boxes put in good shape, and no cans included which are rusted on the inside so far as we can determine by careful examination. They ought to be worth this price, especially for cheap grades of honey.

### JAPANESE BUCKWHEAT FOR SEED.

The demand for this has been so brisk that we have disposed of our stock of nearly 200 bushels, and will doubtless receive further orders which we shall not be able to fill if we do not succeed in finding a further supply. If any of our readers have any surplus seed, or know of any for sale, we should be pleased to hear from you with sample, stating quantity you have to furnish, and the price, 50 lbs. to the bushel.

### NO. 2 OR B GRADE SECTIONS.

We have plenty of this grade in all regular styles and sizes except 4 1/4 x 4 1/8 x 1 1/2 beeway. We have over a million of this size in stock in A grade, and are out of B grade. If you want this size promptly, do not order B grade. The lumber we are working now is so nice that it does not produce very many B-grade sections. For several weeks we have been working off colored lumber to produce a larger proportion of B grade; but this is all used up, and we are now using new stock cut the past winter, which is very nice and white.

### FIKE AT ST. PAUL BRANCH.

Since our last I have visited our St. Paul branch to adjust the fire loss with the insurance company. The damage to building and goods amounted to about \$2500, fully insured. In separate warehouses there was over \$2600 worth of goods untouched. Many of those in the building where the fire occurred escaped injury, while others were only slightly damaged by smoke and others by water. Some goods were, of course, destroyed. On another page we list some of the slightly damaged goods at special prices. There are others which were not listed in time for this issue. Those, especially in the Northwest, who are interested will do well to communicate with our St. Paul office. There are some rare bargains in the lot. The price was put low to close them out quick and make room for new stock. They are supplied with every thing needed in fresh goods, having received a car before this paper is mailed, added to the good stock already on hand.



# GLASS HONEY-PACKAGES

## HERSHISER JARS

round and square, with satin-finish aluminum caps.

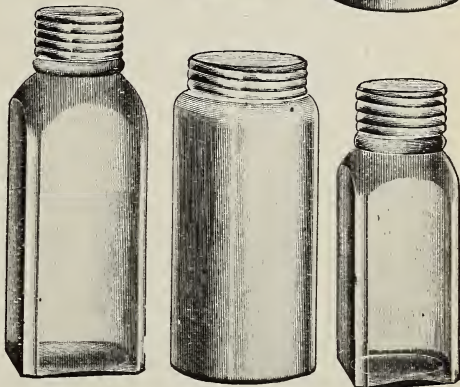
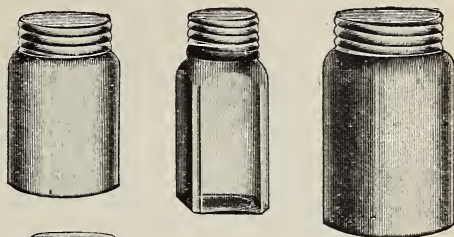
There is nothing handsomer made for exhibiting honey or for bottling for a fancy trade. We have recently put in a large stock, not only here at Medina, but in Chicago, New York, and Philadelphia, from any of which points the jars are supplied at the following prices:

### PRICE LIST OF HERSHISER JARS.

|     | 1/4-lb. square jars with aluminum cap, \$ .95 case 2 doz. Wt. 10 lbs. |    |
|-----|-----------------------------------------------------------------------|----|
| 1/2 | 1.10                                                                  | 15 |
| 1   | 1.50                                                                  | 24 |
| 2   | 1.00                                                                  | 20 |
| 1/2 | 1.15                                                                  | 14 |
| 2   | 1.50                                                                  | 24 |
| 1   | 1.05                                                                  | 18 |

We can also supply the square jars with cork stoppers, either in partitioned cases or in crates, including the corks, from any of the four points named, as follows.

|         | 5-oz. sq. jar in reshipping-cases, \$ .80 case 2 doz.: \$3.35 crate 1 gross |      |
|---------|-----------------------------------------------------------------------------|------|
| 1/2-lb. | 1.00                                                                        | 4.25 |
| 1       | 1.20                                                                        | 5.75 |
| 2       | 1.60                                                                        | 7.50 |



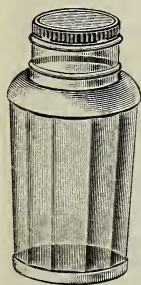
## TAPER-PANEL JARS

1/2 and 1 lb. capacity.

This is a new jar which we are introducing this year, and we believe it is a winner. It has been made especially for us. The cap is a very neat and simple one, securely closing the jar honey-tight. At the low price for which we offer it, this jar should have a large sale. We have them packed only in reshipping-cases of two dozen each, ready to ship when filled with honey, without additional packing.

1/2-lb. taper-panel jar in reshipping-cases, 80 cts. per case; 6 cases, \$4.50. Wt. 18 lbs.

1-lb. taper-panel jar in reshipping-cases, \$1.00 per case; 6 cases, \$5.70. Wt. 25 lbs.



## SIMPLEX JAR.

## NO. 25 JAR.

These are two popular jars of 1-lb. capacity, of which we have sold large quantities. For a year we were unable to get any more Simplex; but they are being made again; and while they are costing us more than they did, they are such a handsome jar that we have secured a further supply. The No. 25 jar we can furnish either with the porcelain top with lacquered band and rubber ring, or with lacquered tin cap lined with thick wax-paper wad. This latter style costs less than the other, and will not be subject to so much breakage in shipping. These are all packed in reshipping-cases of two dozen each at the following prices:

|                        | Simplex, in reshipping-cases, \$1.10 case; 6 cases, \$6.30. Wt. 24 lbs. |      |
|------------------------|-------------------------------------------------------------------------|------|
| No. 25, porcelain top, | 1.10                                                                    | 6.30 |
| No. 25, tin top,       | .90                                                                     | 5.10 |

## TIP-TOP JARS.

This is a reliable jar with glass top, rubber ring, and spring-top fastener. We have it in two sizes, holding 1/2 and 1 lb., packed either in reshipping-cases or crates of one gross at the following price:

Half-pound Tip-top jars in reshipping-cases, \$1.00 per case of 2 dozen; \$5.00 per crate of 1 gross; 1-lb. Tip-top jars in reshipping-cases, \$1.10 per case of 2 doz.; \$5.50 per crate of 1 gross.

## HALF-POUND TUMBLER, NO. 12.

For a cheap glass package for half-pound of honey the tin-top tumbler is very popular. We supply with these tumblers, besides the tin top, a wax-paper disk for sealing it tight when filled with honey. These are packed four dozen to case, or 32 dozen to barrel, at the following prices: No. 12 half-pound tumblers, \$1.00 per case of 4 doz.; \$6.00 per barrel of 32 doz.

## MASON FRUIT-JARS.

These are very largely used for canning fruit, and are often used for honey as well. As we buy them by the carload, we can make the following prices at Medina, all put up complete with porcelain-lined caps and rubbers, in cases of one dozen.

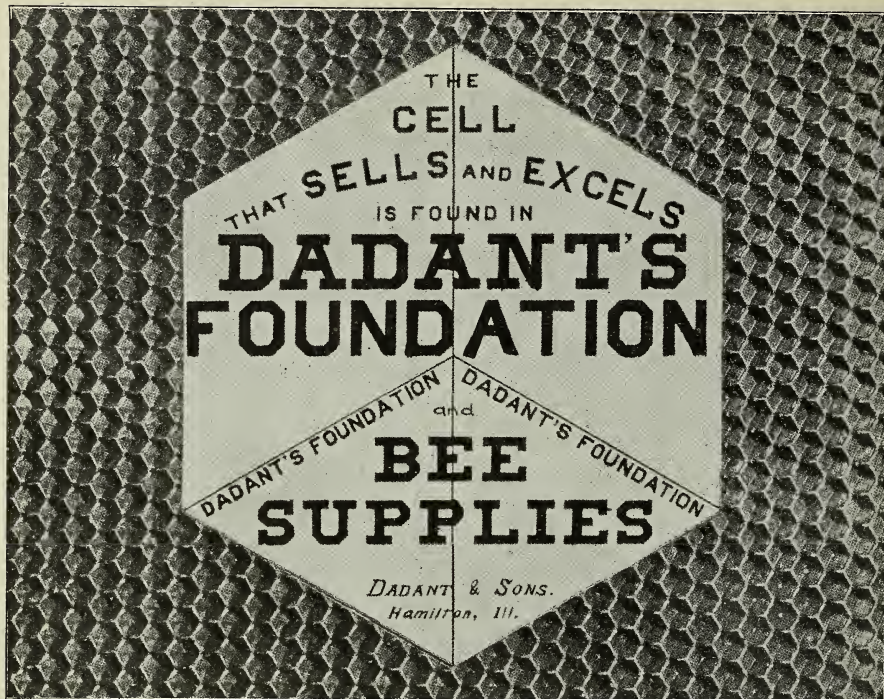
|                  |       |     |           |        |              |        |
|------------------|-------|-----|-----------|--------|--------------|--------|
| Pint size        | Dozen | 52c | Six dozen | \$3.00 | Twelve dozen | \$5.75 |
| Quart size       | Dozen | 55c | Dozen     | 3.10   | Dozen        | 6.00   |
| Half-gallon size | Dozen | 75c | Dozen     | 4.35   | Dozen        | 8.50   |

Triumph wrenches for Mason jars, 15c each; by mail, 20c.

The A. I. ROOT COMPANY

MEDINA OHIO, U. S. A.





# SUPPLIES

FOR

# BEE=KEEPERS

Every thing you want; all made by us  
in our own factories--at  
**LOWEST PRICES.**

**The American Bee-keeper** (published 17 years), a monthly at 50 cts.  
a year. Sample copy and illustrated catalog and price list free. Address

## W. T. FALCONER MFG. CO.

DEPARTMENT G,

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JAMESTOWN, N. Y.



# FIRE SALE

.. of ..

## BEE-SUPPLIES

### AT ST. PAUL MINN.

Of special importance to North-  
western Bee-keepers.

Owing to a fire in our St. Paul warehouse we are obliged to sacrifice a considerable portion of our stock which suffered from smoke and water. In most cases the goods are not materially injured, yet at the same time they can not be sold for new goods. In some instances the goods are slightly scorched, but not enough to hurt. We have put the prices down low enough so that the purchaser will find he has saved considerable money by the transaction.

2 doz. Dixie bee-brushes @ 10c.  
300 thick-top frames @ \$2.00.  
200 Danz. section-holders @ \$1.50.  
5500 No. 2 4¼x1½ Sec., 2-bee-way, @ \$2.25 M.  
7500 " " " " " " " " @ \$2.35 M.  
5000 " 1 " " " " " " " @ \$2.50 M.  
6000 " " " " 2 " " " " @ \$2.50 M.  
5 8-8 supers, in flat, \$1.25 for lot.  
5 4P-8 " " \$2.00 " "  
5 4I-10 " " \$2.00 " "  
5 5-8 Dov. bodies and frames, \$2.00 for lot.  
Ex., thin super fdn., @ 60c per lb.  
Ideal-size @ 60c  
Thin super, regular size, @ 55c per lb.  
Ideal size, @ 55c per lb.  
" " Danz. size, @ 55c.  
Light-brood, L. size, @ 52.  
" " shallow, @ 52c.  
Med. " Jumbo, @ 50c.  
" " Danz., @ 50c.  
" " shallow, @ 50c.  
" " shallow Danz., @ 50c.  
500 T tins, 13-in., \$2.00 for lot.  
100 wire strips for honey-boards,  
\$1.25 for lot.  
60 No. 2 zinc honey-boards @ 12c.  
143 No. 1 zinc honey-boards @ 10c.  
2 5-lb. coils wire @ 75c.  
36 Root foundation-fasteners @ 10c.  
5 Porter bee-escapes @ 15c.  
6 yds. silk tulle @ 50c.  
4 yds. cotton tulle @ 20c.  
8 L. W. Bing. smokers @ 45c.  
3 Conq. " " @ 60c.  
1 Engine " " @ \$1.00.  
6 Danz. smokers @ 75c.  
4 Root Jr. @ 50c.  
3 Standard @ 75c.  
4 rolls enamel cloth @ \$1.50.  
50 West's cell-protectors @ 3c.  
380 I fences at \$1.00 per 100.  
100 plain section-holders @ \$1.00.  
100 Jumbo Hoffman frames @ \$2.25.  
54 Daisy lamps @ 20c.  
10 Parker machines at 10c.—(5 Ideal; 5 4¼)  
13 Manum swarm-catchers @ 50c; with pole, 75c.  
50 Alley traps, 8-fr., @ 25c.  
47 Doolittle feeders, nailed, L. size, @ 20c.  
15 " " Danz. size, @ 20c.  
80 boxes two 5-gal. cans @ \$4.00 for 10.  
18 chaff div. boards @ 15c.  
80 Clark smokers @ 30c; by mail, 50c.  
28 Daisy fdn.-fasteners @ 50c; with lamp, 75c.  
  
HIVES AND PARTS.  
7 5-10, nailed and painted, @ 50c.  
11 5-8 " " @ 45c.  
14 4S-10 @ 50c.  
10 4P-8 @ 45c.  
9 4S-8 @ 45c.  
1 D5-8 @ 25.  
1 4M-8 sp. @ 50c.  
2 4M-8 @ 50c.  
6 4M-10 @ 60c.  
3 4M-10 (burned) @ 25c.  
8 E-10 @ 25c.  
1 A-10 @ 15c.  
1 B-10 @ 15c.  
8 A and B-10 @ 10c.  
3 E-8 @ 20c.

#### PARTIAL LIST OF DAMAGED GOODS.

The injured  
goods are  
not all  
listed here.  
Better go  
and inspect  
the stock—  
You can  
secure a  
bargain.

Address only

**A. I. ROOT CO.,**

H. G. ACKLIN, Mgr.

1024 Mississippi St.

**ST. PAUL, MINN.**

# WOULD YOU HAVE RAISED YOUR HAND?

---

"All those who want to go to heaven, please raise their hands," said the Sunday-school teacher to a class of little boys.

One boy's hand did not come up.

"Why, James, don't you want to go to heaven?"

"No, ma'm; I prefer to stay on earth."

Most of us would agree with James, just for the present. And, after all, old Earth is a pretty good paradise if we are of a mind to make it so or know how to get at its beauties, instructions, entertainments, and interests. The Maker pronounced it "good," but many of us fail to get at the large fullness of its goodness.

The poet Browning said, "God must be glad one loves his world so much."

I have often wished Browning had told us also what God thinks of those who do not appreciate his beautiful world.

By the way, in which class are you? If you really desire to know more and love better this wonderful and beautiful world, you will find efficient, inspiring aid in

## THE GUIDE TO NATURE.

This magazine is in the spirit of James, who thought this earth is a pretty good place for residence—just for a while. Even if you are ninety years of age you may keep young in spirit, and retain the charm of original relation to natural objects.

Let us tell you how to do it. I mean you who deeply love honey-bees and have a big heart for landscapes and plant and animal life—you who find education and recreation in natural objects—you who ward off laziness or discouragement by saying with the Psalmist, "I will lift up mine eyes unto the hills, from whence cometh my help."

Let me tell you the rest of the story.

**EDWARD F. BIGELOW**, the nature-study bee-man,  
Editor of **THE GUIDE TO NATURE**,  
**STAMFORD, CONNECTICUT.**

Send \$1.50 for a year; 50 cts. for trial four months,  
or 15 cts. for single copy.